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Addresses

WHAT THE INDIVIDUAL PHYSICIAN CAN DO TO IMPROVE THE MATERIA MEDICA *

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The subject of this address is, I believe, one of much importance to the physician, both as an individual and as a member of a learned and dignified profession, but a profession which has allowed itself to be imposed on and permitted even its dignity to be lowered and its usefulness lessened by certain influences both within and without. So much has been said in recent years on the subject of proprietary medicines that I might hesitate to bring it up again if the times did not seem so opportune for constructive work, and work in which the individual physician can and must take the leading part.

Before entering on this discussion, however, a few words may be said concerning the place of drug therapeutics in the practice of medicine. The best energies of the profession for almost a generation have been devoted to the discovery of the causes, and methods for the prevention, of disease, and to the development of surgical technic and to the improvement of diagnosis; the greatest successes have been achieved in these directions. These developments have concerned the public and certain specialties rather more directly than the general practitioner who is confronted with concrete and individual cases. The individual patients have profited by these discoveries, but not perhaps so much as has the public.

Forms of treatment other than with drugs are rapidly being developed and it is recognized that some of these methods have not received the general recognition they deserve and are not taught in the medical schools as well as is desirable. Most physicians are probably less skilled in the use of baths, diet, massage, etc., than they are in the use of drugs. And it is probable that these forms of treatment will receive full consideration before there occurs that further development of drug therapeutics for which the future seems so bright.

The important rôle drugs play in medicine is, however, frequently overlooked; it may be well to recall sometimes Naunyn's remark, that were it not for five or six drugs he would not care to be a physician at all. Surgeons especially are prone to forget the influence which drugs have had on their art. More than a century ago an eminent surgeon expressed the opinion that his specialty had almost reached the highest conceivable degree of perfection. This might have been true were it not for the lessons of asepsis learned largely from the use of antiseptic drugs and the discovery of general and local anesthetics.

The facts that there are other forms of treatment which need as careful study and teaching as that of drugs and that the field of activity of the physician in connection with the prevention of disease is ever widening are not valid arguments for neglecting drugs. They are, however, potent arguments for systematizing the study and use of the latter so that the best results may be obtained with the least expenditure of time and energy. Is this the case at the present time? An affirmative answer would imply that physicians do not begin with a handicap of ignorance and misrepresentation as to what they are using. That the profession in the past has been most shamefully imposed on in this respect is too well known to require any discussion; in the volume "Propaganda for Reform in Proprietary Medicines," issued by the American Medical Association, will be found sufficient evidence, and the cases there quoted are only types of many.

Some seem to be under the impression that the profession is sufficiently awake to evils of the character discussed in the "Propaganda for Reform" and that deceptions such as those there exposed are no longer possible. There have undoubtedly been great improvements, but that the physician needs sources of information concerning new drugs other than the statements of those who are financially interested may easily be shown by a few examples.

It may be well to refer first to a case which has been practically settled, for the manner in which it was settled is instructive. In 1885 acetanilid, a simple chemical compound long known to chemists, was introduced into medicine. The name acetanilid is the true chemical name of the substance; it is not especially long or difficult to remember. Another name, "antifebrin," one not even suggesting the composition of the substance, was soon applied to it and has been in more or less extensive use ever since. While most physicians now know that the two names are applied to exactly the same compound, there was for years much confusion and cases are reported of eminent physicians who, not satisfied with the effects of "acetanilid," turned to "antifebrin." Every medical student must learn that the two are identical and it is often some time before he remembers whether antifebrin is another name for antipyrin or for phenacetin or for acetanilid. Even at present, when acetanilid has been included under its true name in most of the pharmacopeias of the world, if the physician turns to one of the leading handbooks supplied to him by the manufacturers he will find under antifebrin nothing to indicate that this is the same as the official acetanilid unless his knowledge of chemistry is sufficiently fresh for him to recognize the compound from its

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chemical formula. These two names for the same compound have already been in the medical literature of the world for nearly a generation and will continue to cause confusion and annoyance so long as the writings of this period are read.

Scores of similar cases have occurred and are occurring at the present time. New names for old drugs are often introduced in a manner to lead the physician to suppose that a new drug is being introduced. For example, I recently received a circular on "soamin" from a leading English firm. In this it is stated that "the arylarsonate 'soamin' was first introduced at the end of 1907," and there is nothing in the circular to indicate that the same substance had been introduced by another firm several years previously under the name "atoxyl" or that the compound itself had been made in 1863 by Béchamp. A little further on in this circular I read: "The toxic symptoms noticed by continental physicians when using other arylarsonates have not been observed with soamin." As a matter of fact, most of the toxic symptoms noticed by continental writers were due to the same substance but under a different name.

The history of many of the recently introduced synthetics is the same and is about as follows: Some manufacturer discovers in a compound long known to chemists therapeutic virtues or sometimes properties which lend themselves to commercial exploitation as therapeutic virtues. The compound itself and the methods by which it is made having long been public property the manufacturer can derive profit only if he can persuade the medical profession to prescribe it under some new trade-marked or copyrighted name invented by himself. Then in a short time the same substance is put on the market by other firms whose sole contribution is a new and often misleading name; in this way there are sometimes introduced for the same compound a dozen names often as dissimilar as human ingenuity can make them. In the confusion which results really new drugs are apt to be overlooked. Thus a short time ago an eminent American physician, not being satisfied with the results he had obtained in certain cases with "atoxyl," had, upon the advice of a well-known English practitioner, been experimenting with "soamin" (with equally unsatisfactory results); neither he nor another physician whom I met about the same time had thought it worth while to try the acetyl derivative of this substance because they were under the impression that this was "about the same as atoxyl." Yet this acetyl derivative is the result of months of work by one of the master minds in medicine (Ehrlich) and certainly well worthy of a trial.

The evil results of this pernicious practice of applying many names to the same substance does not end here, however. Other manufacturers add the "new drug" to complex mixtures, inventing still more new names or, with apparent frankness, naming the mixture after some other but unimportant ingredient. In this way physicians have been led to prescribe unwittingly some powerful habit-forming drugs.

Closely connected with this question of names is another evil—the direct introduction of powerful drugs to the laity. The attitude of the medical profession in disapproving of this practice is often misunderstood. As in so many other cases, self interest is stated to be the prime cause: Lady Montagu thought physicians would oppose the introduction of inoculation for smallpox because she did not think they had "virtue enough to destroy such a considerable branch of their revenue [from treating smallpox] for the good of mankind"; now antivaccinationists state that the profession upholds vaccination for the sake of the trifling fees. Physicians discourage the use of powerful drugs by the laity for the same reasons that they advocate vaccination and other measures against the spread of contagious diseases—for the good of the public. The Council on Pharmacy and Chemistry adopted as a rule that it would not approve an article advertised to the public except in the cases of foods and disinfectants; in explanation of this rule the Council states the objection to such advertising, in part, as follows, ". . . the well-known dangers of suggesting by descriptions of symptoms to the minds of the people that they are suffering from the very diseases described the dangers of an unconscious and an innocent formation of a drug habit, and the evils of harmful self-medication, including the dangers of the spread of many infectious and contagious diseases when hidden from the physician."

One of the most effective means of inviting or encouraging self-medication is the use of catchy, often therapeutically suggestive, names. A striking illustration of the harm a layman may do himself with powerful drugs is reported in a recent number of the *Lancet:* A man believed he had contracted syphilis and took "soamin" in increasing doses until he was severely poisoned. The physician, called in on account of the poisoning, found no indications of syphilis. This case well illustrates one of the chief dangers of self-medication —the absence of correct diagnosis. There is no reason to believe that the firm exploiting soamin had endeavored to persuade the laity to use it without medical advice, but the use of a scientific name (sodium arsanilate, for example) would probably have prevented such misuse and would at the same time convey a definite meaning to the physician.

Many firms make a practice of using names and trade packages which will lead to the introduction of their preparations to the laity as rapidly as possible. Striking illustrations of this practice have been offered by the exploitation of preparations containing hexamethylenamin as their active ingredient. By the use of therapeutically suggestive names and circulars discussing the value of the preparations in gonorrhea large numbers of the laity have been led to believe that some of these are almost specifics for this disease—which, of course, they are not. The wrong that may be done to innocent parties from a layman believing that he is effectively treating such a disease as gonorrhea need not be dwelt on. But is the physician who brings this class of preparations to the notice of the laity by prescribing hexamethylenamin under some of these objectionable forms any less culpable than the one who makes morphin habitués or inebriates by careless prescribing? Yet physicians are doing this daily and such preparations are advertised in most of the medical journals.

The current methods of naming new drugs not only lead to great confusion but serve as a cloak for all kinds of frauds on the physician and the public. The really new remedies, and especially the really new classes of remedies, are not so numerous but that physicians could keep fairly well informed concerning them if the essential facts were presented in a simple straightforward manner. Purely commercial interests are apparently absolutely dominant at present, so far as the nomenclature of new products is concerned, and there is little prospect of improvement until the medical profession—

or rather the individual physician—insists on being told, without any chicanery, exactly what he is asked to prescribe.

But it is not only in the matter of names that many of the even more prominent manufacturers do not deal entirely frankly with the physician and the public. A review of the literature bearing on proprietary medicines will readily show that the physician need not expect more detailed information from manufacturers than he actually insists on or demands.

That physicians have been content and have received but half truths concerning important matters is too well known to need much discussion. One illustration, of recent date, may, however, be given. Reference has already been made to a class of organic arsenic compounds which are attracting much attention. As they seem destined to attract still more interest in the future, and as many new compounds of the same class are being investigated, it was especially desirable that the first information given concerning them should be correct and complete. Yet the very first one, under the name atoxyl, was brought to the attention of the physician with an incorrect statement even as to its composition. Professor Puckner, Secretary of the Council on Pharmacy and Chemistry, seems to have been the first to discover the discrepancies between the manufacturer's statement and the truth. His results were soon confirmed by Ehrlich under the following circumstances: It had been recognized for some time that this compound had certain disadvantages and Ehrlich began a systematic and painstaking search for a derivative which would have the same therapeutic properties but which would be less toxic. He saw at once that the modification he desired to make would be impossible if the statements of the manufacturer concerning the chemistry of the substance were correct. A lesser genius than Ehrlich would probably have abandoned the attempt; Ehrlich did not and soon found, as Puckner had found, that the manufacturer's statements were not correct and that it was, after all, possible to make the derivative desired. The result was the discovery of a new compound, arsacetin, which promises to be of much value.

Illustrations such as the above could be multiplied almost indefinitely, but these are surely sufficient to show that sources of information other than that supplied by interested parties are urgently needed. Were it possible for the physician to learn promptly a new drug under a single name, and be given all that is known concerning its composition and action, he would be in a much better position to begin his clinical studies; he would have more time for careful observation and for the study of the dietetic and other forms of non-medicinal treatment. The physician's task is sufficiently complex and difficult without the handicap of confusing names and imperfect or misleading statements concerning the drugs he uses.

While the entire method of the introduction of new drugs is far from satisfactory from the standpoint of either the physician or of the public, it is but the logical outcome of the failure of the medical schools and of medical institutions to support adequate departments of pharmacology. If every important medical school had a really efficient department of pharmacology, in which properly trained men received sufficient compensation so as not to be compelled to engage in the practice of medicine or in commercial work, but who could devote all their time to teaching and investigation, giving their results freely to the world as do the chemists and physicists in the best universities, the whole aspect of the proprietary medicine question would soon change. How fruitful university laboratories of pharmacology have been in the past is sufficiently attested by the introduction into therapeutics of chloral, of antipyrin and most of the other modern antipyretics, of cocain, of paraldehyd, sulphonal and most of the other newer hypnotics, of strophanthus, eserin, the nitrites, theobromin, the suprarenal glands, and many others.

The endowment of such pharmacologic laboratories would be a good investment for both the medical profession and the public. So long, however, as they do not exist, or are so inadequately supported, the physician must pay the toll of lost prestige and the public that of high prices for new drugs, and neither has much cause to complain. And the manufacturers who make real contributions—and there are many such—have the right to expect the physician to recognize their just claims. But neither the physician nor the public is under obligations to pay toll to the parasites who simply appropriate the discoveries of other manufacturers or of physicians themselves. There are also limits to the benefits which would be reaped by even the worthy manufacturer; for many of the discoveries of the latter are such as would inevitably soon have been made by others and no one should be allowed to secure a permanent monopoly on them.

What steps can the medical profession or, rather, what steps can the individual physician take to secure the information necessary for him to derive the best results from drugs with the least expenditure of time and energy? The answer is as old as the history of medicine itself: by cooperation to establish and maintain standards which in the last analysis shall represent the contributions the individuals make for the common good. Little patience is shown nowadays with those who hold up the past as a model for the present. Yet in the making and maintaining of standards for drugs the medical profession in this country does seem to have departed from one of its most honored traditions, but there are many indications that this departure is only temporary. Until comparatively recently the books of standards—or pharmacopeias—were the work of physicians; they represented the contributions of individual members. Through a variety of influences, some of which are difficult to determine but in which the low standards of medical education played a rôle, physicians took less part in the revision of the Pharmacopeia. With the diminished interest in revision came diminished adherence to standards; and then the Pharmacopeia came to represent less and less the needs of the medical profession. One of the earlier indications that this was the case was the preparation of the first edition of the National Formulary in 1888, by which the pharmacists endeavored to supply a book of standards for non-secret, in many cases elegant, preparations. But the physicians were abandoning more and more standards prepared by disinterested parties and accepting those of manufacturers, and, moreover, the works now prepared almost entirely by pharmacists failed to meet not only the fancied but often the real needs of the physician.

It is not necessary to trace the further history of this subject in detail or to relate the sporadic efforts made to counteract some of the evils resulting from proprietary medicines. A new era began about ten years ago when Dr. George H. Simmons was called to the editorship of THE JOURNAL of the American Medical Association. Dr. Simmons proved himself to be one of those—unfortunately few—editors who do not feel that their duties end with keeping the reading pages clean. As the result

of a review of the advertising pages thousands of dollars worth of advertising was discontinued and a firm stand taken concerning the attitude of THE JOURNAL toward proprietary medicines. This required rare courage, when there was no Food and Drugs Act, when strongly intrenched and insolent proprietary interests were threatening law suits at the least suggestion that the truth be told about their products, when the timorous feared that THE JOURNAL would be wrecked, and when the medical press was hostile; but he won the battle and to-day edits the cleanest medical weekly of the world. Medical journalism does not record a more courageous course.

In the attempt to purge the advertising pages of THE JOURNAL of fraudulent products some competent and reliable authority was needed that could be referred to to decide what was right and what was wrong, especially as regards composition of the medicinal products offered to physicians. The final outcome was the formation of the Council on Pharmacy and Chemistry charged with the preparation of the book "New and Nonofficial Remedies." The purpose of this book has often been misrepresented. The authors are frequently accused of trying to dictate to the doctor or of conspiring against his freedom. The simple truth is that the American Medical Association, through the House of Delegates and Board of Trustees, has requested a number of men to serve as a committee, without remuneration of any kind, to prepare a small work on drugs which for some reason or other are not in the United States Pharmacopeia or the National Formulary. The one criterion for the admission of proprietary articles to this book is this: are they as represented; and the primary question is always, do they have the chemical composition claimed? In considering the question whether the drugs are as represented the Council is frequently confronted with a dozen preparations of the same class claiming to be "absolutely the best"; thus there are about a dozen of the "most powerful" but "least toxic" germicides, a dozen or more of "absolutely the most powerful" diastases; quite a number of the "safest" hypnotics and so on. Evidently some of the gentlemen making these claims are mistaken and the Council has asked "to be shown." Some firms have admitted that their statements were incorrect and have changed them to correspond to the facts; others have admitted that their claims were false but stated that they would try to make products corresponding to them in the future, but that in the meanwhile they could not afford to injure their standing with the physicians by telling the truth; still others have stated that it is none of the physicians' business whether the truth is told them or not. As a rule no further attention is paid to these latter classes of products; occasionally one of them is exposed as an example of the kinds and varieties of frauds that are being practiced, but the Council desires its work to be constructive and not destructive.

The Council has found that there is a large and increasing number of physicians who desire information such as the Council attempts to collect; this desire comes partly from a fuller realization that a physician should neglect no opportunity to be certain of the composition of the drugs he uses. As a concrete example of the deception that may be practiced unwittingly I may refer to a preparation claimed to be a solution of mercuric iodid in an oil suitable for hypodermic injection in syphilis. Dr. Seidell examined a sample of this preparation in the Hygienic Laboratory; not a trace of mercuric iodid could be found. A second sample, of a lot made in the presence of a medical practitioner who weighed the mercuric iodid himself and saw it added to the oil, was also found to contain no mercuric iodid. We do not know in what stage of the process the drug was lost, whether by volatilization, by filtration or how; we do know, however, that it was not in the preparation which reached the physicians—as indeed the clinical results of some of the latter showed. Would not a physician who had used such a preparation in a critical case of syphilis and lost his patient feel as guilty as if he had made any other kind of a fatal mistake in prescribing, and might he not be liable in a court of law? The Council desires to give physicians information which will prevent such possibilities as this. There is a rather large number of physicians who resent having lies told to them about drugs, just as the self-respecting man in any other walk of life resents a lie. There are also those who are weary of having chemists, pharmacists, and other laymen (in one case a piano salesman) endeavoring to teach them therapeutics. There are others, again, who are becoming impatient of having the same drug presented to them under a variety of meaningless or misleading names. There is also a large number who do not care especially whether the absence of mercuric iodid, pepsin, cod-liver oil, iodin, quinin, etc., in so-called preparations of these drugs is due to incompetency or knavery but who do want some evidence of their presence in addition to that of individuals financially interested. The Council is endeavoring to make "New and Nonofficial Remedies" a work of standards for such physicians as these and it invites, as it has from the beginning, the cooperation of all.

Soon after the Council began its work an endeavor was made to arouse the antagonism of manufacturers on the ground that their property rights were being attacked. Not many of these, however, have had the hardihood to ask physicians to use their preparations and at the same time to tell them that it was none of their affairs what these contain. On the contrary, many have found it good policy not only to state the composition but to state how this may be verified by other chemists, just as the Pharmacopeia gives tests of identity and purity for the various products contained in it. I know of no physicians or editors of medical journals who deny the necessity for work such as the Council is doing. It has, however, bitter enemies. One of the leaders of these stated that it was folly to attack the American Medical Association or the Council on Pharmacy and Chemistry directly; and that the only chance of checking the work of the latter was to attack the members personally. Dr. Simmons, as Chairman of the Council and as editor of THE JOURNAL which has led in the movement, has been the subject of most frequent and persistent attack. Most of the recent ones, some of which are anonymous, can be traced directly to those who are financially interested, in one way or another, in proprietary medicines. It is scarcely necessary to consider these; a glance at the advertising pages of the medical, or rather pseudomedical, journals containing some of them, or a moment's consideration of the editors' commercial affiliations, will suffice to disclose the animus.

The incompetency or insincerity of some of the manufacturer-editors, who, till recently at least, were most persistent in these attacks and who pose as working for the uplift of the profession, may be illustrated by a concrete example which came to my attention. Dr. Seidell and I examined some time ago in the Hygienic Laboratory a number of samples of a solution of nuclein ex-

ploited by a company whose fervent appeal for a "square deal" is known to many of the physicians of the country. Here are a few typical statements from a circular issued at that time by the firm: "For years we have been the chief promoters of nuclein therapy, endeavoring to place its principles before the profession in the right light—in a practical, usable form and as far as possible deprived of all uncertainty. Out of our experimental work we have developed the chemistry of nuclein to a point that produces a product second to none." They stated that their nuclein was "all right;" that it had the unqualified endorsement of "hundreds and thousands" of physicians well able to judge by results; that they believed it to be far the best product on the market, etc. The following is said as to its dosage: "It should be remembered that, except in acute toxemias, over-stimulation of the cells is not to be desired; therefore, in low states of vitality, small doses (gtts. 2-5), long continued, give best results. In all acute invasions of the system LARGE DOSES (gtts. x-xx, preferably hypodermically) are, however, necessary. These should be repeated at least twice daily. In emergencies, where the patient is overwhelmed with toxins, the exhibition should be made every few hours." Our examination of the solution thus described in such enthusiastic terms showed the presence of from 0.04 to 0.05 per cent. of solids (about the amount present and permitted in many potable waters). Assuming these solids to have consisted entirely of nuclein (a rather rash assumption perhaps) the usual dose of the solution recommended would have contained from 1/400 to 1/1300 of a grain of nuclein. If the dose were repeated about a dozen times a day the patient would in the course of a month have received nearly a grain of nuclein—an amount obtained several times over in any ordinary single meal. If the case were desperate—if, as the circular states, "the patient were overwhelmed with toxins"—and, following the directions, large doses (gtts. x-xx) were given hypodermically, it would have required about 100 hypodermic injections to introduce a grain of nuclein. Why not give the patient a bite of sweetbread? It would have contained as much nuclein and been more agreeable. The difference in price might be a factor; for, while sweetbreads are somewhat expensive, fifty times the price of pure gold was asked for the nuclein in this solution. The crushing reply to such suggestions would probably have been, quoting from the circular: "This nuclein is all right. It has the unqualified endorsement of our Drs. . . . as well as hundreds and thousands of others well able to judge by results." Seriously, has not such so-called clinical evidence about the value of that of physicians who a few years ago were "curing" malaria with powdered gypsum sold under the name "tasteless quinin" or of the laity who "cure" measles with sheep dung? And think of wasting valuable time in the case of serious illness experimenting with such stuff. The company exploiting this nuclein took the commendable step of practically withdrawing it from the market until they learn something about the subject; but what are the "hundreds and thousands" who obtained such good results with the old preparation doing in the meanwhile?[1]

Will the medical profession allow itself to be influenced by criticisms coming from such sources as the above? And nearly all the criticisms of Dr. Simmons and of the Council have come from exactly such sources and similar interests closely allied, commercially, with them.

Before leaving this subject a word may be said concerning the attitude of many medical journals toward secret proprietary medicines. Disappointment is frequently expressed that so many of these continue to accept the advertisements of preparations which have been shown clearly to be fraudulent. It is unquestionably humiliating to see that the standards of so many medical journals, in this respect, are decidedly lower than those of some other professional journals and of many of the popular magazines. Still, an improvement is very noticeable; a sharper distinction has been made between the reading and advertising pages and several have dropped some of the most objectionable advertisements altogether. The editors of many have become apologetic. Some say they would like to reform but will not be dictated to; like Falstaff, they will not tell the truth on compulsion. One editor remarked that some of the advertisements in his paper were so evidently frauds that nobody could be deceived! As regards those journals which are published simply as business enterprises and in which there is a real division between the provinces of editor and advertising manager, the profession may as well accept this fact: Dishonestly exploited drugs will be advertised so long as there are doctors to use them or so long as doctors subscribe for such journals. The fact may be deplored, but it will remain a fact. The case is different with the journals supported by medical organizations. An organization which can not support a journal which is clean from cover to cover should not try to publish one at all. At present the advertising pages of the *Military Surgeon*, the official organ of the Association of Military Surgeons, are a striking example of what should not be tolerated in a journal controlled by a body of medical men; it is to be hoped that the new management will make radical changes.

Instances could be multiplied almost indefinitely of how secret or semisecret proprietary medicines stand in the way of progress. Many physicians in their zeal to give their patients the benefit of the latest discoveries are prescribing preparations which contain practically no medicinal ingredients at all or only the old familiar drugs under a new name. The remedy is to turn to the practice of using only those drugs, the composition of which has been determined by physicians or by their representatives.

Of the standards at present available the United States Pharmacopeia is, of course, the best. By the enactment of pure drug laws by the United States and by the several states this has practically become the national standard. Where there is the proper cooperation between physicians, pharmacists and officials entrusted with the enforcement of pure drug laws the difference between the value of official and proprietary preparations is about as great as that between the legal currency and the promissory notes of Tom, Dick or Harry; those of Tom may be all right, but the probabilities are that those of Dick or Harry have not their face

1. "Nuclein" has frequently been a source of confusion and misrepresentation in the "literature" of proprietary medicines. In strictly scientific literature the physician reads how Loewi administered thirty grams (450 grains) pure nucleic acid to a man without observing any ill effects. From this a physician would infer that ordinarily, at least, nuclein is a harmless substance. Another proprietary preparation with the innocently sounding name "Protonuclein" was found, however, to contain considerable thyroid. There was recently placed on the market another secret proprietary product, Iodonucleoids, purporting to be a compound of iodin and nuclein. To a physician who is at all familiar with the subject of the nucleins a compound of iodin and nuclein would appeal as something new and worthy of trial. On examination, however, this preparation was found not to contain a true nuclein at all, but seemed to be a product such as can easily be made by simply evaporating a solution of hydriodic acid with ordinary casein.

value. Hence one of the first duties of the physician is to adhere as closely as possible to the preparations of the Pharmacopeia. A little study or consultation with one of those truly professional pharmacists who are to be found in almost every community will convince many a physician that he is using drugs for which officially recognized ones may easily be substituted. If, however, after careful study, he fails to find in the Pharmacopeia or in the case of a pharmaceutical mixture, in the National Formulary, the drug he desires to use, I believe the next best source of information is New and Nonofficial Remedies. The latter contain, in the case of proprietary preparations, not only the statements of the manufacturers, but also the results of the investigations of disinterested parties made by the authority of the American Medical Association. It is a noteworthy fact that of the several hundred preparations admitted to this book not a single one has been shown to have a composition differing from that given, whereas the larger part of the proprietary preparations at present on the American market which have not been admitted to New and Nonofficial Remedies have been found to be of uncertain or variable composition or exploited in a questionable manner. Hence a physician should be very cautious in using a drug which is not contained in one of the above-named books. If, however, after careful investigations he is convinced that he has found a drug of value which has not been admitted to these works he is false to the traditions of his profession if he does not make the fact known to his colleagues. It would be safer, however, for him first to submit his findings to the secretary of the Council on Pharmacy and Chemistry, Professor Puckner, who probably has a more encyclopedic knowledge of new drugs than any other man in the world. Professor Puckner, as secretary of the Council, has from the first requested such suggestions as well as criticisms of the products contained in New and Nonofficial Remedies. If more such requests were sent than he could answer it would pay the profession to provide additional assistants for him. The office of THE JOURNAL of the American Medical Association should continue to be, as it is at present, a trustworthy source of information to physicians generally as well as to the members of the Association.

By far the larger number of drugs used by most physicians are those recognized by the above standards, but, on the other hand, there are not many physicians who do not use at least a few drugs of questionable character. It is the sum total of the latter which is largely responsible for the present unscientific and unsatisfactory state of drug therapeutics. Most proprietary remedies are sold at such a large profit that a comparatively few orders will keep one of them alive. If each individual physician would carefully consider the drugs he uses and then either abandon those which are not official or are not contained in New and Nonofficial Remedies, or, if convinced that they are of value, use his endeavors to get them admitted to these works (the door of the New and Nonofficial Remedies is always open for honestly exploited drugs) much would be done to solve the proprietary medicine problem. The ideal condition will be reached only when every drug which the physician needs has been admitted to the final legal standard—the United States Pharmacopeia—and the physician should consider it one of his duties—to his patients, to his colleagues and to the public as well as himself—to use his influence to perfect and maintain this great work. The opportunity to support the Pharmacopeia comes to the physician every day; the opportunity to make his influence felt in its revision comes to him but a few times in his life. One of these times is now approaching. The Convention which meets in Washington next spring will formulate the plan of the Pharmacopeia which will be the great guide for the next decade. It is the duty of every physician to endeavor to have his state medical society and his alma mater represented at this convention by three (the number each such organization is entitled to) earnest, broad-minded men who will insist that, among the multitudinous interests seeking recognition, those of the physician and his patient will not be overlooked.

Finally, I desire to put in a plea for the support by the physician of research work in pharmacology. For thousands of years the great contributions to materia medica came from the medical profession; in the last few years only have they been coming more and more from without. The profession has lost prestige and in addition has become confronted with the proprietary-medicine problem. The solution is for the contributions to, as well as the control of, new drugs to come from the pharmacologic laboratories of the medical schools, of the Government and of medical associations. Nothing is so potent, not only for positive progress, but for dispelling darkness, as a great discovery.

CERTAIN IDEALS OF MEDICAL EDUCATION

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It is the function of the teacher to perpetuate, by transmission to the on-coming generation, the knowledge and traditions on which civilization is based. We who have for our share of this indispensable work the transmission of medical knowledge and of medical traditions find the difficulties of getting our freight into the depots of youthful minds always numerous and often great. We, therefore, are constantly busy with efforts to improve our transactions by selecting the most valuable knowledge to transfer, by seeking devices to quicken the business, and by trying to save the labor-waste of the students. We have, besides, to add daily to our stock all the latest novelties. Despite all these pressing demands, we must keep the whole army of data in perfect order, under the command of general ideas and of natural laws. It is inevitable that the pressure on our energies should absorb most of their power so that we are habitually too busy to pause; and yet it is , I am sure, helpful to pause occasionally to consider, not the details, not the ways and means of our business, but its underlying principles.

May I regard this hour as such a pause, which we dedicate to an examination of the purposes of medical education and their best fulfillment? The function of a good medical school is to produce competent practitioners of medicine. I can not venture to call this an original idea of my own. Though it is a platitude to which all assent, it has its place here, in order to permit us to add that it is not the sole function of a good medical school, for only that medical school attains a high place, or even real importance, which adds on a large scale to medical knowledge and trains a steady succession of young men to become medical teachers. Only by the active pursuit of these high aims can the influence of a medical school inspire sound professional ideals in

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the minds of its students, practitioners to be. It appears, then, more accurate to put our platitude thus: The *chief* function of a medical school is to produce practitioners.

THE ESSENTIAL QUALITIES OF A PHYSICIAN

If we are to proceed intelligently, we must begin, it seems to me, with an inquiry as to what are the qualities which a physician should have, and the development or acquisition of which by students a medical school ought to render possible.

There is one quality the possession of which is the supreme need of the physician, without which he is as unfit and useless as a tone-deaf musician, or a color-blind painter. It is a quality with which every normal man is naturally endowed, just as every normal man is endowed with hearing and sight. But just as it is true that not every man can become a musician or an artist, so is it also true that for most men it is impossible to become good physicians, for the reason that they lack the one fundamental indispensable quality, that rare gift—a faculty of exact observation.

Accurate observation is by far the most difficult art which mankind has ever essayed. A nation may count on furnishing abundance of military talent—I begin with the lowest profession—plenty of politicians and statesmen, enough of competent lawyers; it may even hope to have gifted artists and authors; but it can scarcely expect to produce a single master of the art of observation in a century. It is important to realize this fact. Although the fact itself is beyond discussion, its significance is little heeded. The reasons for it are not far to seek. In most occupations a partial success is valuable; if a good result is gained it has a practical value. If a general wins a campaign, he is victorious; yet there probably was never a war which might not have been ended with less than the actual loss to the victors. A statesman whose constructive work benefits his country still does not produce perfect laws. Bismarck always dreaded the unforeseen consequences of his statesmanship. Lawyers have proved themselves useful, though litigation due to their imperfect work is incessant. A beautiful poem or picture may be a precious joy without reaching to the standard of absolute perfection. Scientific observation, on the contrary, aims for the absolute, and so far as it fails to establish the absolute truth it must be renewed, tried again and again, until every blemish is removed from it. Observation is accurate and good only when it attains absolute perfection. Religion sets before us an ideal of absolute moral perfection. All other ideals of men admit of limitations, allow of boundaries, save in our waking dreams and saving else only science, which claims from us the ideal of perfect observation, which alone can reveal the absolute truth.

In most professions merit is measured by a finite scale, but the scientific observer must strive toward the Absolute, which to our human powers seems infinitely remote. Because the ideal is so lofty very few come near it. In a century Germany produces one Helmholz, France one Pasteur, England one Darwin—an American peer of these three is yet to become known.

Observation is much more than seeing, hearing and feeling. Our sensory perceptions are but the beginning, and the simplest link in the chain of processes. Yet in my experience no young man, without prolonged and severe discipline, can be trusted to forge aright even this first link on the anvil of opportunity. To appreciate the real difficulties, we must pass behind the scenes and study the mental apparatus.

The faults of the observer are to be explained not so much by the working of his eye as by the failure to work of his brain. The organs of sense are, as the physiologists have taught us, imperfect, severely limited in their scope and ever ready to furnish us with defective sensations and illusions, but they work with astonishing accuracy as compared with the mind. In my long career as a teacher of medical science, I have had only two students whose eyes were not equal to good microscopic vision, but I have never had even a single student whose mind could perceive the retinal images obtained from microscopic preparations.

Successful scientific observation depends on three psychic factors: intelligence, concentrated attention, and judgment. Intelligence is necessary to guide the observer, who must before he begins have a clear understanding of the conditions by which the character of his observations is determined or modified. Above all, there must be an intelligent appreciation of what to look for, and an intelligent technical acquaintance with the methods to be employed. Only to a very limited extent, indeed, can the direct observation of natural conditions suffice. Herein, to my thinking, lies perhaps the most characteristic distinction between ordinary and scientific observation: the latter relies constantly on factors artificially introduced to expose objects too hidden or to record phenomena too remote or swift for observation. Indeed, science is based on the invention of methods of research, and the introduction of each new method is followed by an advance of knowledge. In order to realize this, we have merely to think what we owe to the methods of injection, of staining sections and bacteria, of making graphic records of the pulse and muscular contractions, of filtration and dialysis, of electric measurements, and so on through a list of immense extent. Without these numerous artificial methods our sciences would have remained rudimentary. Intelligence is, therefore, especially necessary to master methods, and no training in any natural science is more than a farce which does not give the student, first of all, a practical acquaintance with the methods used and of their advantages and their errors.

Concentrated attention we, of course, all know is indispensable, but, like other virtues, it is easier to commend than to practice. It is comfortable, after receiving a general impression, to pass on to something different with a fresh interest; but power is only for those who can sustain the closest attention for a long time, because otherwise details are overlooked, and the anticipated fact remains unnoticed. The ability to catch hold of the wholly unforeseen and significant phenomenon is the distinctive gift of a great mind. We are mentally blind to what we do not anticipate or at least know as a possible occurrence. The history of science is rich in illustrations to the point. One such curious illustration I may mention. For many years the red blood corpuscles of man and other mammals have been described as like biconcave discs in shape, but this form is to be observed really only as an artefact, and, as we now know, the corpuscles in life are cup-shaped, being hollow on one side and convex on the other. The truth has been known to us, however, only a very few years, because every one who examined the blood had a preconception of the corpuscular form, and was mentally blind to the evidence as to the real shape, of which any one can now

easily satisfy himself, because his attention will be rightly directed. Innumerable instances could be compiled of scientific discoveries long missed because of failure to attend to some unexpectedly significant fact. It is by trained attention that we achieve accuracy and thoroughness; hence the first aim of the instruction in every scientific laboratory should be to impart to the student a habit of relentless attention and a high standard of exhaustive precision of observation. The quantity of information acquired is of minor importance.

Judgment is the highest quality. By attention and intelligence we may gather data, but judgment coins them into conclusions for the intellectual commerce of the world. Judgment, as here conceived, is much more than the judicial faculty, which is merely skill in balancing the pros and cons—a useful legal faculty, for the law courts deal with evidence mostly from average persons who are often biased by their interests, and in any case are ordinarily incapable of accurate observation. The law courts also follow a method, that of having opposing counsel on the two sides, which is absurd in science, though—be it confessed with sadness—this deplorable method is often mimicked in scientific debates. The scientific method is based on our belief that invariably the evidence must be wholly and exclusively on one side. If there is an apparent conflict, the duty of judgment is to find out, first, what part of the evidence is erroneous; second, what logical errors have occurred in the inductions drawn from the observations. As to the observed data, judgment must decide, first, whether they are to any extent erroneous; second, to what extent they are incomplete. For such a decision in any department of research to-day a thorough expert knowledge of the special subject is necessary, which must include not only intimate acquaintance with all previous work—a requirement too often shirked—but also intimacy with all the possible sources of error. Scientific judgment is a mental faculty which becomes efficient only after long experience and development. It is by illustrating in his own person the successful activity of this faculty that the professor of natural science exerts his most beneficent influence on his pupils.

Judgment renders its loftiest service when it deals with the logical inductions from the data. The first step logically—though often not psychologically—is the determination of the differences and of the resemblances among the data. Resemblances are far more difficult to recognize than dissimilarities and they are often as nonexistent to untrained minds. Then follow the proper reasoning processes which, if successful, carry us beyond the observations to the generalization, which makes part of the growth of science.

Now the nearer a practitioner of medicine comes to possessing the gift of observation, as just described, the better practitioner he will be; and, inasmuch as it is only in science that such ideals of observation are maintained, it is evident that a scientific training is indispensable to produce physicians psychologically fit. One still sometimes hears the distinction drawn between the "practical" and the "scientific" doctor; so far as I know, the most important difference between a "practical" doctor and the truly scientific is that the patients of the former are the more likely to die. Yet, of course, practical experience is of the utmost professional importance. Medicine is one application—only one of many—of biologic knowledge to practical needs, and the practical technic of the application must be mastered. There are useful practitioners of medicine whose utility is founded on their practical experience, but I had rather entrust myself to the care of one who had in addition to a practical technical mastery a mind educated to observe with scientific accuracy and reason with scientific precision. Those who extol the practical man and decry the scientific are of the sort who would rank plumbers above engineers.

St. Louis has had two physicians to whom I wish specially to allude, because they possessed the noble spirit of research to a pre-eminent degree. Their memories are held in honor wherever biologic science has a foothold. Both owe their well-earned reputations to their ability as scientific observers; Beaumont and Engelmann were practitioners, but their investigations demonstrate that they realized in their own persons the ideal we have before us. Their work has added an enduring luster to the fame of St. Louis. May they have many worthy successors!

The second quality, which both the medical student and the graduated physician must possess is, at least in my opinion, intellectual endurance. The medical mind must work not only well, but strenuously and continuously. The period of study in America is now actually from six to eight years, since four years has become the standard of the medical schools, and admission to them demands one or two years' work in the preliminary sciences, to all which a year or two in the hospital ought to be added. During every one of these years the student must work at high pressure, mastering one branch of science after another, learning the general principles, the technical methods and the practical applications of each, and gradually fitting himself for the art of practice. Having accomplished so much, he can not for an instant relax his acquisition of further knowledge, not merely from his own direct experience of diseased persons, but also by keeping abreast all his life with the progress of medicine. He must keep up not only with the improvements in medical treatment, but also with the advance of scientific knowledge. To do this perfectly has already become impossible, and the difficulty is constantly increasing. The older practitioner as he becomes busier, and his years render new modes of thought more difficult for him, must lag more and more behind the times and feel himself less and less well equipped than the on-coming young man. He is saved from discard only by his ripened judgment and his wisdom in dealing with patients. It is evident that intellectual endurance, a sustained mental power, an ever-active gift of apprehension, a ceaseless passion for knowing—call it what you will—is demanded of the members of the medical profession as of no other. Medicine is a profession which only men of exceptional ability should enter. Men of moderate gifts should seek other occupations. In the future, as medical knowledge becomes still more vast, high ability will be indispensable for those who try to master and apply it. No other profession is likely to equal it in difficulty, for the lawyers, engineers, architects, chemists and others have far less complicated problems than the physician; and their fields of knowledge are smaller. Moreover, specialization in the learned professions mentioned is far more feasible than in medicine, for every part of our bodies is related so intimately to every other part that no specialist can deal with his subject as an isolated field of practice. Not merely as in all scientific professions must a man keep up with the general progress of knowledge, but, since every organ is related physiologically and pathologically to every other, the medical specialist can

not seclude himself in his chosen subject, but must preserve his active intercourse with all medical domains. The practitioner, no matter how much absorbed in work, must remain all his life a quick, diligent, alert, receptive learner. Never may he let himself feel a senescent apathy to new ideas. The ideal physician possesses a life-long intellectual endurance.

The psychologic traits desirable in members of the medical profession are many and complex. Even were I competent to review and discuss them all, such a disquisition would not suit this occasion, and it will suffice to keep our attention concentrated on a few fundamentals. Let us, therefore, content ourselves with adding loyalty as the third indispensable quality, for loyalty best expresses that quality of single-minded devotion, that trinity of faithfulness to occupation, to purpose and to person which makes us gratefully reverence the great physician. Loyalty is a natural gift, but, like all natural endowments of character, it may be cultivated, trained and strengthened. Our entering students rapidly classify themselves according to their loyalty to their immediate work. The best men already feel the gravity of their decision to become physicians; they appreciate the seriousness of their studies, and work faithfully each day with a prophetic instinct that each day's knowledge builds up the base for their future decisions. They are already filled with a sense of responsibility; and to nourish that sense, to sustain the loyalty of the learners should be the constant goal of the medical teachers' ambition. The student should be made to feel from the very start that his purpose in life must be to serve, and that devotion to his studies is his initiation into the life of perfect devotion to his patients.

REQUIREMENTS FOR A GOOD MEDICAL STUDENT

The man who purposes to study medicine should have in high degree three gifts, not one of which is common among mankind, yet all of which he must have. The three gifts are: the power of reliable observation, intellectual endurance, loyalty.

If the estimate we have made of the needed capacities of a physician be correct, it follows that a good medical school can exist only with good students. Coins of full value can not be made of impure metal. We must, therefore, start with the consideration of the means to select students to the exclusion not merely of the bad ones, but also of the mediocre. We must not attempt to mint doctors from merit basely alloyed. Examinations should have their main use, not as a means of admission, but as a means of exclusion, and the more men of low and middle rank that are excluded the better. One poor student damages a whole class. We should look forward to the exclusion of all men who fail to get high marks in the preliminary tests, so that there may be a reasonable probability that all who get in are capable of hard sustained mental work and of loyalty to their studies. The examinations ought, however, to accomplish more than this: they should afford evidence that the candidate has a natural power of observation, and that the power has already received some scientific discipline, and, finally, they ought to prove that the candidate has the preliminary knowledge of chemistry, physics and general biology without which the pursuit of the medical sciences is impossible. It is a welcome sign of progress that these entrance requirements are being rapidly adopted by the medical schools of the country, and there is, I am glad to perceive, a steady advance toward uniformity. In my opinion, such a preliminary training, with the appropriate sifting of the unfit, can be accomplished by two or three years of college work—and it is not and can not be accomplished by requiring an A.B. degree (or its equivalent) unless that degree represents adequate courses in chemistry, physics, biology, French and German. Under the prevalent elective system, a man may become a bachelor of arts and yet be not only undisciplined, but also very ignorant of natural science. I have had to do with many such men, and can only say that they are so inferior at the start that only the most brilliant of them can overcome the heavy handicap. Indeed, I can not affirm that even the brilliant men are able wholly to repair the evil, for in the rush of medical study they have no time to make up their deficiencies in the preliminary sciences. They enter as cripples and as cripples still they are likely to graduate from the medical school.

Although observation is the foundation of knowledge, and no human knowledge is built on any other foundation, men of intellectual power are by no means always interested in observation. There are mathematicians who can scarcely be said to feel interest in any observations. I often recall with amusement a distinguished mathematician whom I would not have trusted to make an original observation beyond a simple measurement, and yet who condescendingly explained to a company of biologists that their science must remain inaccurate until its results were mathematically formulated. The reply might have been made to him that no mathematical result can be accurately known until put in graphic form, so that it can be observed. The one half-truth is as good as the other. Our mathematical friend had still to learn that there is an accuracy in a complex visual image with which mathematics can not even distantly vie. We might construct a scale, with the anatomist at one end and the mathematician at the other; both alike depend on observation, but one seeks his accuracy chiefly in the renewal and extension of his personal observations—he loves first-hand knowledge; the other seeks his accuracy in the logical evolution of quantitative relations, and cares but little for the simple observations on which his mathematics depends. Between these two extremes we must range those minds which enjoy and seek both observational and logical satisfaction, and who are often experimenters. Among experimenters there is a wide range in the degree of relative interest—on the one hand, in what can be directly observed, and, on the other, in the logical work following the experiment. Only those in whom the love of observation is predominant are likely to succeed as physicians. For the pure experimenter there is plenty of room in medical science, but he can hardly find his right opportunity in medical practice.

The natural observer differs both from those who, like the humanitarians, are satisfied by second-hand knowledge, and from those who prefer experimental work, by his insatiable craving for seeing, and, to a less extent, for hearing and feeling. His inborn need is to have direct contact with the phenomena. Nothing short of the personal acquaintance with the phenomena satisfies him. Now those students who while in college elect the humanitarian studies, and neglect the natural sciences, are extremely unlikely to have the observing faculty. If they are required to study chemistry, physics and biology before they get to medical work they will be tried out, and those who have not the observer's gift, will learn their limitations in time to avoid becoming medical impedimenta.

THE STANDARDS FOR THE MEDICAL SCHOOL

Having obtained our students, we ask next: "What shall we teach them?" Really good answers to this question are given by the curricula of our better schools, which differ from one another only in detail, since in all the subjects are the same and the order in which they follow is essentially fixed.

Two comments on the present typical medical curriculum may be ventured: too much time is devoted to lectures, too little time to physiology. It is, if I be not mistaken, universally true that in American medical schools a large number of lectures are given which are mere repetitions of what is often better expounded in the text-book. It would, in my opinion, be wiser to devote many of the hours now used for lectures to practical work, restricting the lectures to general principles, the elucidation of complicated subjects, especially those which can be made clear by verbal explanation combined with drawings, models or experiments. Lectures at best can convey very little actual information, and their greatest usefulness is in exhibiting to the students the point of view, the intellectual attitude of the professor, who is not fit for his position unless his mental work is better than that of any of his students. The outlook in America is full of encouragement. Nowhere else in the world has laboratory instruction advanced as far and well as in this country. Germany must look to her laurels, for the whole university tradition there exalts the lecture. The system is strongly entrenched, for the professors depend on lecture fees. The future of scientific education depends on laboratories, and unless European universities imitate the American laboratory standards the stream of students from Europe to the United States will soon be greater than that of a generation ago from our country to Germany.

As regards physiology, have we not to deplore the fact that very few physicians think physiologically? It is only too true that if a practitioner is asked for a physiologic explanation, his answer is usually so lame that it can scarcely be said to go. Ask an oculist why the tears run on a cold day; or a clinician the cause of pain from indigestion, or how opium works, or what is the physiologic basis of shock; ask a gynecologist why birth occurs; ask a general practitioner the cause of senescence; or ask a surgeon how the after-effects of ether are caused—and the answer is likely to be by no means in physiologic terms, by no means an analysis of functions, but rather an empirical statement; and a physiologist listening might well feel himself transported to the middle ages. The body is a functioning machine, and when it does not work properly it ought not to be tinkered by empiricists working by rules, but examined and repaired by physicians, whose chief claim to confidence is that they are expert physiologists, whose knowledge of the bodily functions guides their practice. I deem the opinion sound which regards physiology as the central discipline of medicine, and maintains that a generous development of clinical physiology is the improvement needed above all others in our medical curriculum. We are all agreed as to the importance of anatomy in medical education—it can hardly be exaggerated—nevertheless, we may feel tempted to say that physiology is even more important.

In regard, however, to material resources, our schools differ widely; and those which suffer from deficient laboratories must either make up their deficiencies or go under, drowned in the flood of the progress of the others. We have in America to-day a number of laboratories at various medical schools which are serving as present standards. All the best teaching in the medical sciences is laboratory teaching. Each one of the sciences must have a large building and expensively equipped. The building must afford a separate work place for every individual student, rooms for the staff, rooms for advanced students and research; a lecture hall, library, and other necessary conveniences. These are merely minimum requirements, and mean that the cost of the plant for a respectable medical school is not to be reckoned by thousands, but by millions of dollars. There is no choice. Those responsible for the financial management may be staggered by the demands of their medical faculty; they may be able to meet the demands only partially for the time being, but in a comparatively few years from now only those medical schools will be found surviving which have met these demands. With time, too, the demands are sure to become more insistent and more numerous. Never have the financial responsibilities been so great, but, I repeat, there is no choice. The laboratory education is our one sure foundation. It is indispensable that it be amply provided for; if that can not be, the failure ought to be acknowledged and the school closed.

It is in the laboratories—and only in them—that the power of observation can be disciplined and developed, and only in them that the students can acquire genuine knowledge. In speaking thus, we class the hospital with the laboratory. It is my belief, strongly held, that a laboratory is an efficient influence only when it is a place where original research goes on actively. While it is true that the informational purpose guides the daily labor, and that it is indispensable that the student make by observation personal acquaintance with as many phenomena as practicable, yet it remains also true that the student should find in the laboratory an ideal standard of work—and the only possible high ideal is that of original investigation. It is relatively easy, under the guidance of an experienced instructor, with materials carefully prepared beforehand, to confirm by actual observation the statements of the text-book.

No doubt one exclusively so trained can become a useful mediocrity among practitioners; no doubt, even, that gifted men so trained will forge ahead despite the training; yet certainly a better education is secured when the students acquire appreciation of productive scholarship, and feel themselves so near it that it is an actual and living interest to them. Old discoveries do not stir much. We read calmly that some fact, which we find stated in all the text-books as familiar to everybody, was discovered fifty or forty or two hundred years ago by a man whose name awakens no significant associations. Utterly different is the effect on the student's mind when he learns that his instructor has made a successful research and has new discoveries to report. It is inspiring to him to know the discoverer. He feels himself a witness of the work of creation, and unconsciously his belief in the possibility and value of original work becomes a living influential conviction; and he rises at once to a higher intellectual plane. He advances on his way toward becoming a man of culture —a title which to-day only those can claim who have learned to revere productive scholarship.

Let us never forget that in contemporary education the moribund ideal is slavery to books; the nascent ideal, mastery of facts!

The consideration of our needs forces on us the conclusion that medical schools not only ought to be, but must be centers of research in order to succeed. To this end each school should be closely allied with the postgraduate department of its university, and the various medical sciences should be on a par in academic standing with the other natural sciences. Scientific students not intending to become physicians should be encouraged to enter the medical laboratories, and the highest university degrees should be as open to students of anatomy, pathology, bacteriology, physiology, etc., as to students of zoology, chemistry, or physics. If this policy be adopted with zeal, the reaction on the medical school will be wholesome, the effect on the university at large, uplifting.

THE SELECTION OF THE FACULTY

We have passed in review important aspects of the problem of maintaining a good medical school, but the most important factor of all, on which the successful solution of the problem chiefly depends, we have not yet mentioned; it is the corps of professors. Is it reckless to assert that no school has ever secured a sufficient number of sufficiently good professors? Perhaps no school ever will. As President Remsen has said, keenly and justly, the supply of good professors is always short. One great professor may leaven a whole faculty, but the need is for a great professor at the head of the five principal divisions: anatomy, physiology, pathology, medicine and surgery, and for first-class men at the head of the principal specialties. The majority of American medical schools certainly are without such corps of leaders.

The prevalent constitution of the medical faculties is due to various causes. First may be mentioned the survival of professors from an early epoch with lower standards; professors of anatomy who are not professional anatomists; of pathology who are busy practitioners; of clinical medicine, without knowledge of modern pathology. This difficulty cures itself. A second cause is the custom of promoting local men, who are rewarded with professorships for their faithfulness rather than for their ability. Every such promotion prevents the appointment of an abler man from outside. A third cause, and the most potent of all, is the American system of appointment by the president and trustees of the university, which often amounts to appointment by the president alone.

The administration of our colleges and universities has become more or less autocratic. The university president has great power, which we are accustomed to see liberally employed, on the whole, to the immense advantage of the university cause. President Gilman's service to higher education has our fullest admiration, and there are other presidents still living who are great leaders and whom we delight to honor. We can not regret this phase of our development, though there are many now who hope and believe that it is only a phase, and who welcome the unmistakable signs of the transformation of the office, by which the university president of the future will be more a business administrator and less a minister of education. The president is likely to long remain a valuable—an almost indispensable—factor in our university life; but, in my opinion, is not likely to retain any such control over appointments as he at present exercises. This control depends on the custom of having appointments made by the board of trustees, which is typically composed of business and professional men who are qualified to advise about the management of funds, the conservation of resources, and the distribution of income. The trustees ought, however, to admit frankly to themselves that their chief usefulness is, first, to increase the resources of the university; second, to determine the broad questions of general policy so as to secure a symmetrical growth of the institution. It is inevitable that the large majority of them should be inexpert in education, inadequate in their notions of scholarship, and ignorant of the needs, methods, and possibilities of most—if not all—kinds of original research. Such a board at its best can not by any possibility be a very successful piece of machinery for the selection of professors, because the members can not form a valuable judgment of their own concerning the only indispensable qualification of a candidate for a professorship—his ability to do original research of a high order. They forget too readily and too often that it is a disgrace to a university to appoint a man as professor chiefly because he is a "good teacher"—such a man may be a good school teacher, but only investigators can give university instruction.

In securing a faculty, the president and trustees must be guided by advice, and they undoubtedly are so guided to a very large extent at the present time. But the advice is too often gathered more or less fortuitously, and not by any definite custom or fixed principle. For our future welfare it is important to plan for obtaining the best advice, or, in other words, to make sure of good nominations being systematically presented. Accordingly, I look forward to seeing in the near future the task of nominating candidates for professorships and other teaching positions assigned to the university faculties.

It goes without saying that a university teacher must be by character and manners fitted to join a society of scholars and to come into intimate contact with young men and women. We can not, however, make every respectable gentleman a professor; but we must be sure that he has a sound, powerful, creative intellect, of which the only satisfactory proof is original research of a high order. In comparison with the possession of this intellectual gift, all other endowments are subsidiary. Professors may vary much in their ability to lecture, their availability for administrative work, in their adaptation to social life, in their capacity for business, in the quality of their minds; but all good professors are necessarily alike in the possession of creative mental power.

The selection of candidates for professorships must, then, be made by persons who can form expert judgment on the original investigations of the possible candidates. In universities, qualified judges are found in the faculties—and usually only in the faculties. To the faculty, then, ought to be given the exclusive right of nomination, leaving to the trustees only the right of confirmation; partly as a check against possible occasional errors of judgment by the faculty, partly as a financial safeguard against expense not warranted by the actual resources. This implies a radical reform in our universities; but until the time comes when teaching appointments can be initiated only by faculty action there will continue to be an unnecessarily large proportion of more or less incompetent professors.

Let us summarize the opinions expressed: A good medical school produces good physicians. The medical profession is a very difficult one, and to meet its requirements exceptional men must receive a splendid special training. Therefore, a good medical school will

accept only such students as have been selected by severe tests with high standards; it will maintain lofty ideals of knowledge, of observation, of judgment, of original thought and of loyalty. It will uphold these ideals not only by striving to furnish every important material facility in laboratory and hospital, but also by engaging able instructors. The good medical school may become great which adopts as its motto: Great professors make a great school. Let this be your device, for the greater in ideals and achievement your school becomes, the more you will help and inspire all the other medical schools in our country.

Harvard Medical School.

THE SCIENCE OF CLINICAL MEDICINE

WHAT IT OUGHT TO BE AND THE MEN TO UPHOLD IT *

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NEW YORK

The honor of the presidency of a society goes with the privilege of discussing some of the aims of that society. Such a privilege becomes a duty on the occasion of its first birthday. We have to show the specificity of our objects to justify the addition of a new medical society to the many already in existence. As your first president and as one of the instigators of the movement which led to the formation of this association permit me to discuss some of the problems to the solution of which this association wishes and hopes to contribute.

CLINICAL MEDICINE AS A SCIENCE

In the first place, I wish to discuss the problem of clinical medicine as a science. In years gone by, medicine was a unit and its leaders tried to master all its aspects. With the development of scientific methods and the growth of knowledge a process of differentiation took place. Heavy branches grew out of the stem of medicine, broke off and obtained an independent existence. Anatomy with all its dependencies broke away early, then followed physiology, pathologic anatomy, pharmacology and physiologic chemistry. Bacteriology tore off the branches of etiology and established itself as an independent growth. All these offsprings of medicine are now well established as pure sciences; they still closely affiliate with the mother-stem and are often designated as the sciences of medicine. That what is left of the old stem is clinical medicine. What is the character of this residuum? It is generally designated as the practice of medicine. I am not aware that any one has had the courage to call it a pure science. Those who do not like to call it an art say that it is an applied science. According to this view, the relation of clinical medicine to the sciences of medicine is that of technology to science in general. I am afraid that this conception of clinical medicine is widespread among those who are in the practice as well as among those who are in the sciences of medicine.

However this may be, I feel sure that such a view is logically erroneous and practically harmful. I wish to plead for an extension of the process of differentiation also to clinical medicine. I am of the opinion that clinical medicine as it exists now is made up of two constituents: one part has all the elements of a pure science and ought to be coordinate to the other pure sciences of medicine, and the other part is the real practice of medicine, an applied science which has many elements of an art. At present both parts are so closely interwoven that they present the appearance of a natural unit the splitting of which into two parts might appear to some as an impossible and undesirable process. I shall call to mind, however, that medicine made the same impression of an indivisible unit in the days when pathologic anatomy, physiology, etc., were inseparable constituents. To-day nobody doubts the necessity of an independent existence for the last-named constituents of former medicine. A considerable degree of separation of the science of clinical medicine from its practice is more desirable than even the separation of the coordinate sciences, because the requirements of sciences and practice are in a certain sense mutually antagonistic to one another and the simultaneous cultivation of both branches with equal attention is detrimental to the progress of either of them.

There is a fundamental difference between science and its correlated practice in any sphere of human activity. Science wishes to attain truthful knowledge of the subject it investigates. It attains this end in the safest way when it is least side-tracked by any extraneous motives. The motive of utility obscures its vision, and haste retards its progress. Practice, on the other hand, avails itself of acquired knowledge for the purpose of attaining a certain useful end. The more reliable that knowledge is which it has to employ, the more safely will it attain that end. But the use of any part of that knowledge which is indifferent to the attainment of the useful end hampers the practical progress. In other words, practice gains its ends best the purer the quality and the smaller the quantity of the science which it has to use. Permit me to say that my advocacy of the separation of a clinical science from its practice is not actuated by any disregard for the practice of medicine. On the contrary, I entertain now and have always entertained a strong conviction that the efficiency of practice should be the supreme object in medicine. At the same time I feel sure that the efficiency of that practice will be best attained when the search for the knowledge which the practice has to use should be carried on in the same manner and by the same methods as are employed in the search for knowledge in other branches of intellectual activity. In other words, clinical research should be raised to a department of a clinical science and be theoretically and practically separated to a considerable degree from the mere practical interests, that is, separated so far as the various and variable conditions permit. It will be the practice not less than the science of medicine which will benefit by such a separation.

Now let us see what the domain of clinical medicine is and whether it contains problems which can be treated by the methods employed in pure science. The sciences of normal anatomy and physiology teach us the structures and functions of the normal body; pathologic anatomy tells us of the anatomic changes found in a body dead from one disease or another. To clinical medicine is left the study of the phenomena and their sequence as they occur in a living body during the entire course of a disease. It has to interpret these phenomena by known physiologic laws, to identify them with similar phenomena experimentally produced in animals and it has to correlate the phenomena observed in the course of a certain disease during life with the anatomic changes found at the postmortem examinations in case the disease has a fatal termination. It is also one

* Presidential address at the first meeting of the Association for the Advancement of Clinical Research, May 10, 1909, Washington, D. C.

of the tasks of clinical medicine to study the influence on the onset and course of phenomena of diseases which certain means and remedies may exert whose physiologic actions are well established. In other words, the domain of clinical research comprises the study of the natural history of diseases, their physiology and their pharmacology. Can there be any doubt that these studies constitute legitimate objects of a pure science? Objections may be raised, and will be raised in certain quarters, against the admission of the clinical science to the sacred inner circle of pure sciences on account of the impossibility in clinical medicine to verify the conclusions by the experimental methods. Assuming that this is an unassailable fact, what of it? Are the problems of biology, a science which enjoys an unassailable position in the councils of pure sciences, all or many of them provable by experiment? Or are the sciences of paleontology or geology amenable to an experimental proof? Yet nobody questions the scientific right of these branches of human knowledge. Furthermore, admitting that clinical research must necessarily remain less precise and its results less convincing than that, for instance, of physiology. But, then, physiology itself is again a great deal less precise than physics and chemistry and is certainly less irrefutable than anatomy. Does this throw a doubt on the claim of physiology to be a pure science?

As to the impossibility of verifying certain conclusions regarding human diseases by human experimentation, there is still this much to say. Each disease is an experiment which Nature makes on the organism. The very large number and the great variations of these experiments of Nature offer favorable opportunities for testing the theories made regarding the nature of these spontaneous experiments. Furthermore, clinical research should, indeed, be coupled with animal experimentation; any new point of view gained by observation in clinical medicine which can not be verified on human beings should be tested by experiments on animals. By such a procedure not only clinical medicine, but also physiology may learn a good deal, for which the following facts from the recent history of medicine are classical illustrations. The recognition of myxedema as a special type of disease led to the understanding of the function of the thyroid glands, and the observation of the coincidence of pathologic processes of the pancreas with diabetes led to the discovery by clinical investigators of the glycolytic function of the pancreas. Finally, it should be borne in mind that there are lines of experimentation which may be carried out even on the sick human being without any detriment to him and which can be conducted with profit only by trained scientific observers, for instance some studies in pharmacology or in metabolism.

Among the tasks of clinical medicine there is one which is on the borderland between the science and practice of medicine, being perhaps of greater importance to the latter than to the former. It is the search for simple or complicated means by which established units of diseases may be recognized safely and perhaps also easily. In one word, it is diagnosis. Since this activity is not carried on with a purpose of adding knowledge, it would appear that it belongs rather to the department of the practice of medicine. Such facts can be established only by means of careful critical observations and it will be more to the purpose when at least the development of the principles of diagnosis should remain in the hands trained in careful methods of research.

After showing that there is a definite field for a science of clinical medicine the next question is who should be the men to carry on the research in this field, what should be their qualifications? In the first place, they must have a training fitting them to carry out investigations in conformity with the requirements existing in all pure sciences. They must not only be informed and trained in the other sciences of medicine, but must have carried on various investigations in one or more of these pure sciences, so as to become familiar with careful scientific methods and imbued with a scientific spirit. They will thus learn best how to shape a problem so as to make it amenable to a solution; how to marshall the consecutive steps of an investigation so as to bring out the reply to the question in hand. They will learn to avoid bias in the search, to apply criticism to the findings; they will learn not to trust only few facts, not to rejoice prematurely over findings and not to be disheartened by failures. They will thus acquire the habits and the tastes of the investigator, the scientist, which may then stick to them for life.

However, after all these preparations they must select clinical research as the main field of their scientific activity. Clinical science will not thrive through chance investigations by friendly neighbors from the adjoining practical and scientific domains. Such volunteer service which for the present is keeping up the cultivation of the unacclaimed region is most certainly very welcome. But the acclamation, cultivation and maintenance of a field of pure science of clinical medicine can not be accomplished by chance services from volunteers; for such a purpose we need the service of a standing army of regulars. The investigator in clinical science must devote the best part of his time and intellectual energies to the cultivation and elevation of this field just as the the physiologist does in his domain—or at least as he ought to do. For the sake of elucidation let us compare the relations of a science of clinical medicine to its practice with the relations of science to technology in any part of physics or chemistry. Let us take electricity as an instance. In the electrical industry there is a large corps of electrical engineers who are bright, inventive and on the alert to make practical use of any newly discovered principle in general. Some practical engineers manage to make valuable contributions to the theoretical knowledge of their branch. Nevertheless the science of electricity is in the hands of pure scientists who are setting the pace of progress in the correlated practical branch. It is the discovery in pure science which makes great inventions possible. It was, for instance, the purely scientific demonstration by Hertz of the existence of electric waves that gave the impetus to and made the invention of wireless telegraphy possible. The following is a quotation from the presidential address of Professor Nichols before the Association for Advancement of Science[1]: "Communities having the most thorough fundamental knowledge of pure science will show the greatest output of really practical inventions." This is surely true also for medicine. And let me say to you that the Hertz's, the Roentgens, the Bunsens, the Emil Fischers, and a host of others, who are the real creators of knowledge and invention, are satisfied to live on comparatively small salaries, while it is within their easy reach to make twenty times the amount of their salaries as consultants, if they would be willing to give up a part of their time which they devote to inves-

1. Science, Jan. 1, 1909, p. 5.

tigations in pure science. Now, the leaders in practical engineering in electricity surely compare favorably with the leaders in the practice of medicine with regard to the completeness of their knowledge in the respective spheres. While thus the search for knowledge in electricity is carried on by men devoting themselves to pure science, the search for knowledge in clinical medicine is left in the hands of men who devote most of their time and energies to their practice and to the golden fruit it bears. Under such circumstances, how shall we expect to find the progress in science and practice of medicine keeping abreast with the striking progress to be met with in other branches of science and practice?

A few years ago I tried to fix the responsibility for the shortcoming of internal medicine in physiology, because this science is keeping aloof from medicine and its problems.[2] Anatomy, which gave its undivided attention to the human structures, prepared an excellent basis for a successful surgery, the problems of which are essentially mechanical in character. The problems of clinical medicine are essentially of a functional character, and the enlightenment which it requires must come from physiology. This science, however, developed a tendency to keep at a distance from medicine on account of the inexactness of the latter. There is an improvement to be noted in this regard; there is a growing tendency in physiology nowadays to pay greater attention to medical problems. However, even if physiology and other related medical sciences would devote all their time and energy to the study of purely medical problems, it would not bring about a radical solution of our perplexing problem. Neither will this be accomplished by the creation of chairs for experimental medicine. The regeneration or rather creation of a science of clinical medicine must come from the innermost of medicine itself. It is true, as stated before, that the men who are to tackle these problems must have a thorough training in the sciences allied to medicine, but the center of their activities must be within clinical medicine itself. They must have a bringing up within medicine, their minds must have been filled up with thinking, worrying, brooding over practical and theoretical problems of clinical medicine.

Let me recapitulate. There is a necessity for a differentiation of clinical medicine into a science and a practice. The clinical science has well-defined objects and is a most important department. It must be managed by a set of men specially trained for and almost exclusively devoted to that task. Without the development of such a department of clinical science the efficiency of the practice of internal medicine will lag behind, no matter how progressive the allied sciences of medicine are and how great their efforts to be useful to medicine may be.

THE CONDITIONS AS THEY ACTUALLY EXIST

In conjunction with the foregoing considerations let me glance at the conditions of clinical medicine as they actually exist here and abroad. I may state that neither abroad nor here do we find a separate class of investigators confining their activity solely to the domain of the science of clinical medicine. Everywhere science and practice of clinical medicine go hand in hand. We may, however, admit at the outset that there is an enormous difference in the status of medical research between abroad and here. Let us take the development and the present status of clinical medicine of the German-speaking countries as an illustration of the conditions abroad. We shall notice that there the mother stem of medicine managed to retain a scientific aspect despite all processes of differentiation.

When for the first time pathologic anatomy broke away completely from medicine and was taught by Rokitansky at the University of Vienna as an independent branch of medical science, we find that at the same time and at the same place the celebrated Skoda was teaching the remaining trunk of clinical medicine as a natural science, constructing the methods of auscultation and percussion on a sound basis and establishing a firm connection between the *intravitam* diagnosis and the postmortem findings. The purely anatomic tendencies of that celebrated school of medicine which unfortunately gave birth to nihilism in medicine, was soon curbed by the appearance of Virchow on the medical scene in Berlin. While also working for the establishment of pathologic anatomy, gross and histologic, as an independent natural science, he manifested throughout his long life a deep interest in the development of clinical medicine on sound lines. At the very beginning of his brilliant career we find him stating (in the prospectus to the first volume of his *Archiv*) that practice of medicine should be an applied science and the ideal of the science should be a complete pathologic physiology. The great clinical contemporaries of Virchow strove for a similar ideal. Frerichs introduced chemistry and Ludwig Traube the methods of experimental physiology into the domain of clinical medicine. I shall not dwell here further on historical details. I shall only say that clinical medicine in Germany remained true to this ideal throughout all these years of marvelous growth of medicine. The exponents of clinical medicine in Germany are the flag bearers of pathologic physiology. The contemporary clinicians master the immense knowledge and manual skill which contemporary clinical medicine demands of its disciples, and nearly all of them are themselves diligently adding new facts to the store of medical science. I do not need to tell you the particulars. Some of you know from personal experience such master clinicians like Müller, Krehl, Kraus, Minkowsky, and a good many others like them. However, the standard of medicine is kept high not only by the heads of university clinics; the various members of their staffs, heads of hospitals and their staffs and a host of volunteer workers are continually digging for new fruit in the soil of clinical medicine. The medical literature is full of original, first-rate work in the science of clinical as well as of experimental medicine contributed by men whose main abode is clinical medicine.

Now there is in Germany no special chair for the science of clinical or even experimental medicine. All these contributors to medical science are in a sense simply medical practitioners. What is the secret of their scientific success? It is simply this: to these men science is the first and practice the second object of their life. To most of the leaders of medicine in Germany the tasks of gaining and diffusing knowledge receives their first attention and the consultation practice comes in last. Again, these very leaders before they have acquired their commanding positions spent many years of their life in preparing themselves for it; in training in scientic methods, in acquiring knowledge in the allied sciences and in the science and practice of clinical medicine, living meanwhile on small incomes, having no pri-

2. Congress of Science and Art, 1904, v, 395; chairman's address.

vate practice at all or having a practice too small to interfere with their life ambition. You can not lead such a life unless you are possessed by idealism and a scientific spirit. That is the key to their success. And when these men become teachers, they can not fail to impart this ideal spirit to their students. That is the way they themselves received it. But they received it also in the institutions of their early education, where sport and habits of millionaires' sons are not the factors which form the character of the youth. They received it from the people among whom they grew up, among whom the worth of the individual is not measured exclusively by a gold standard. They received it from the care and encouragement of the government which, no matter what its political ideals may be, never loses sight of the fact that the cultivation of science is one of the greatest assets of a people. They received it in the traditions of medicine of their country; even before the new era when medicine was all in a cloud of so-called natural philosophy, only the substance of medicine was all wrong, its spirit was all right.

That is the situation abroad. Now let us look at the development and the present status of clinical medicine in this country. At a glance one observes with amazement that nearly all the factors which favored the development of a scientfiic spirit in Germany are absent. However, I shall not try to enumerate all the shortcomings with which the development of medicine in this country had and still has to contend. There is no educational advantage in doing it and you are all familiar with the situation. On the contrary, I take pleasure in pointing out the encouraging fact that, despite all the difficulties, medicine in this country gradually rose to a commanding position in many respects. It is an instructive and stimulating fact that the progress of medicine in this country was carried on through the efforts of a few high-minded men or groups of men who at various times transplanted the spirit prevailing abroad into this country. I shall, of course, not attempt to enter into the particulars of the history of this progress. I wish to refer briefly, however, to a few phases in this history. In the first important phase, clinical medicine in America received an elevating impulse through the activities of a group of medical men who continued their studies in France, where they came especially under the influence of the famous clinician Louis. Statistical methods of observation of diseases and diagnosis by auscultation and percussion became, then, the chief characteristics of internal medicine in this country. During the second period, young American physicians pursued their postgraduate studies in Austria and Germany. They brought home a knowledge of gross and minute pathologic anatomy and an aptitude for the use of the microscope. Pathologic societies were started and the teachers of medicine began to give separate lectures on pathologic anatomy and to instruct in the use of the microscope as a clinical aid. The studies and teaching of these new subjects gave at that time a scientific flavor to clinical medicine. The last period covers about the three last decades with the contradictory results of which we are confronted to-day. Again, medical men went abroad for postgraduate studies and perhaps in larger numbers than ever. But what this high class of young medical men studied there now was no longer in the direct interest of clinical medicine; they trained themselves in the intricacies of the sciences of medicine. The results of the studies of this period were again of great benefit to medicine in this country; in fact, they were of greater benefit than ever. In a comparatively short period the special sciences of medicine, thanks to the activity of a brilliant group of men, have gained a strong foothold in this country; special chairs and laboratories were created in many schools of medicine for pathology, physiology, bacteriology, pharmacology and physiologic chemistry. The work which is being accomplished now in these laboratories compares favorably with the work done in the countries with older scientific traditions and much more favorable surroundings. However, by this very departure clinical medicine itself suffered a visible retardation in the development of its own department. I discuss this phase not with pleasure, but the truth must be said. To my mind it is a fact that the leading clinicians of this generation do not compare favorably with their predecessors in this country, not to speak of a comparison with the leaders of clinical medicine in other countries. One of the reasons for the retardation in the progress is the loss to clinical medicine of the brainy men who now devote their energies to the pure sciences of medicine. Another reason may be found in the fact that by giving up pathologic anatomy and microscopy to special departments clinical medicine lost that part which has given it formerly its scientific character. An evident drawback to the progress of internal medicine in this country is the fact that its teaching at the present time is mostly still in the hands of men who received their medical training nearly exclusively in this country and at a time when pathologic anatomy was the exclusive basis and auscultation and percussion practically the exclusive methods of diagnosis. But in the last twenty-five years internal medicine changed its aspect greatly. The men who want to teach the medicine of to-day must have an education and training radically different from those which were customary and sufficient in former years.

However, the greatest evil of them all is the deplorable fact that in most instances internal medicine is taught in this country by very busy consultants who can give only a small fraction of their time and mental energy to this one of the side issues of their busy lives. Teaching medicine and furthering its science is a very serious business which ought to be carried on by men who are ready to devote all or most of their time to it.

Here are problems for you to solve. The progress of clinical medicine in this country has to be accelerated again. We might reach the level which we have seen to exist abroad. But we ought to strive to get still higher; in this field lack of modesty is a stimulating virtue. Look at the allied sciences of medicine, the level of which they have reached in a comparatively short time without any tradition and only through the activity of a small group of high-minded men. The progress of medicine in this country was always carried on by the few and not by the masses. Clinical medicine must reclaim some of the brainy young men who were enticed by the sciences of medicine. You represent a new generation. You have had an education and a training in modern medicine and the allied sciences. You have a training in investigation, the constitution requires it of you. The constitution which you have adopted shows your spirit. Among its objects is "the cultivation of clinical research by the methods of the natural sciences and the diffusion of a scientific spirit among its members." But you will accomplish more; the constitution imposes on you the obligation to be active in the diffusion of the principles of the society particularly among the students who come under your charge. I would recall this obliga-

tion to the minds of the members who were called within this year to chairs of medicine at influential places. The constitution does not keep you down exclusively to science, but let me tell you: beware of practice. It is a bewitching graveyard in which many a brain has been buried alive with no other compensation than a gilded tombstone.

One last word. The men whom you now see sitting on the bank left behind while the boat of progress swiftly glides away with fresh winds and under fresh sails were themselves in their youth passengers of similar boats and cut faces at others who were left behind. Be generous to them, but do not repeat their mistakes. The secret is: never leave the boat.

Rockefeller Institute for Medical Research.

Original Articles

THE NEED, METHODS AND VALUE OF MEDICAL COLLEGE INSPECTION*

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That we have in this country no national body having legal power to charter and control educational institutions is generally understood. Under our system of government this control, along with the licensing of physicians, belongs to the police powers of the various states. In the majority of foreign countries, however, there are national boards or committees which charter all schools, including medical, and which insist on definite standards being maintained.

This country is still comparatively young and in some respects has not attained full growth. Our educational institutions have been allowed to shift for themselves and, of course, much confusion of standards has resulted. The past eight or ten years, however, has seen a gradual development toward system and in the last few years particularly rapid progress has been made. At the present time only three or four states regulate the chartering of institutions, while in the majority of states any body of men can secure articles of incorporation for a college or school by paying the required fee, no question being raised regarding the ability of the incorporators to furnish education.

As might be expected, we have, taking the country as a whole, a large number of educational institutions—including medical colleges—with a great variety of methods and standards. We find some high schools and academies attempting to teach college subjects to students from the elementary grades and, worse still, we also have so-called colleges and universities teaching high school subjects and granting baccalaureate degrees on that basis.

VARIETY OF "MEDICAL COLLEGES"

When we come to the institutions professing to teach medicine in whole or in part, we find even greater confusion. From the various healing cults which have no use for the fundamental principles of medical science up to the thoroughly equipped, high-grade university medical schools—and all must be included in any complete investigation of medical education—this country has more medical schools than all the rest of the world combined and, on the whole, lower standards than are to be found in any other country.

The medical cults referred to have practically no standards or, at best, enforce only a common school education for admission and give a two or three year course, after which they turn out "doctors" of this, that, or the other—it does not matter to the average layman who doesn't know the difference. But even among the schools usually included in the term "medical colleges" there is a most amazing variety of standards. There are several, the entire equipment of which consists of a blackboard, a table and some chairs. There are some which merely drill their students in answering questions asked at state board examinations, having no use for laboratories and clinics. Meanwhile the graduates of these schools usually succeed in passing the state license examinations. There are colleges which grant the degree after a course given in the 2½ or 3 hours at night for four years of 30 or 40 weeks each, which, to equal the actual time spent by students in our day schools, would require from 12 to 14 years. There are still colleges at which ungraded courses of lectures are given year after year to all classes alike. There are legally chartered medical colleges located in towns so small as to make clinical material seriously limited or entirely lacking. There are several at which no clinical training in obstetrics is given and more at which no postmortems are seen by the students and where there is no opportunity to study gross pathologic specimens. On the other hand, there are numerous grades of institutions up to the small but increasing number of high grade medical colleges which are probably equal to any in the world.

I have given only a brief statement of the amazing variety of institutions professing to teach medical students and which are annually turning out armies of those who seek the privilege of practicing medicine. While many are thoroughly competent, there are, doubtless, many who are illiterate, untrained and decidedly incompetent. While they differ greatly in their educational qualifications and possibly in their "methods of treatment," those who, by whatever hook or crook, secure the right to practice will be alike in this respect: they will all be required to differentiate between health and disease, to determine the nature of diseases, deformities and injuries, and to stand between life and death in many of the cases to which they may be called.

IMPORTANCE OF STATE BOARDS

Under our form of government, the only legal barrier which stands between a sick and suffering humanity and this job-lot of would-be practitioners is the state licensing board. How important it is, therefore, that the state board be given full power, and that all obstacles be removed from its path. The splendid work that has been done by these boards, often in spite of many difficulties, is the most hopeful sign that this problem will, in time, be properly solved.

At the present time, however, too many obstacles are hindering the boards from obtaining the best results. There are now some 65 or more boards in the 50 states, only a few of which are given sufficient financial support to permit of the best work, and many are continually having to contend with the inconsistencies of legislatures, which, after adopting strong medical practice acts, containing fair educational standards, proceed to limit seriously the board's power by granting special legislation to this, that or the other medical sect, providing for special standards or special boards. It has been

* Read before the Nineteenth Annual Convention of the National Confederation of State Medical Examining and Licensing Boards, Atlantic City, N. J., June 7, 1909.

stated by attorneys that, if fairly tested in the courts, such special legislation would probably be declared unconstitutional. The solution of the sectarian problem seems logically to be the adoption of an educational standard with which all medical schools professing to train those who are to practice medicine and differentiate between health and disease must comply. If it can be ascertained that the medical school is up to that standard and the graduate passes the examination, then grant a physician's license and let the holder practice by whatever method his educated common sense may dictate.

INVESTIGATIONS OF MEDICAL COLLEGES NEEDED

Such an educational standard could not be drawn up without a complete knowledge of the conditions existing and nothing would more thoroughly reveal the need of an effective regulation of medical practice and thereby strengthen the power of state examining boards than a thorough investigation of medical education, including an actual inspection of every institution professing to teach medicine. This investigation should be national in its scope and should be free from any political, local or sectional bias. If thoroughly made it would be of much benefit in many ways. Low grade and fraudulent institutions would be exposed properly, while colleges which are honestly endeavoring to keep abreast of the increasing demands of medical education would be benefited. The necessity for the endowment of medical education could be emphasized and deserving schools pointed out. Such an investigation would also simplify the work of the State Examining Boards. It would reveal the schools which state boards would not care to recognize and, although some practice acts may require that the board itself make inspections before the withdrawal of recognition, such inspections would need to be made only of the colleges which were declared unsatisfactory by this investigation. From the standpoint of expense alone, each state board could scarcely be expected to examine every medical college in the country and fifty different inspections by as many different boards would be poor economy, would lead to much confusion and would be an unnecessary burden on the medical college.

I have purposely used the word "investigation," since to obtain accurate knowledge would require much more than is usually meant by an "inspection." Nevertheless the inspection is a very essential part of the investigation. In fact the inspection should be an investigation at first hand, on the premises, to find out whether the college really exists, what it has in the way of equipment and what it is doing. Without this actual inspection any investigation is far from complete, considering what is so generally known, that statements made in medical college announcements can not always be relied on. You all have doubtless heard it remarked that a statement not strictly true may be so often repeated that the narrator comes to believe it true. At any rate, at the inspections the investigator will sometimes hear statements which are not borne out by the facts. During the investigation, therefore, nothing should be taken for granted and leading questions should be avoided. Careful notes should be taken and as much corroboratory evidence should be secured as possible. These statements may seem harsh, but to learn the truth the methods outlined are in some instances quite necessary. If falsification in college announcements has been resorted to or if wrong or misleading statements are made during the inspection it is highly important that the investigator learn the actual facts. Colleges which are honest in their efforts and intentions always welcome investigations and doubtless prefer that such investigations be thorough. Each college is a problem in itself and the methods followed in the investigation will necessarily vary. The following, however, will give a rough outline of some of the points which should be systematically taken up in the inspection of all colleges:

METHODS OF INVESTIGATION

1. THE CHARACTER OF THE COLLEGE.—Inquiry should be made to learn whether it is a stock corporation or whether a department of a university; whether its finances are controlled by the faculty or by a separate board of trustees and, if a department of a university, what control the latter has of the finances and standards. If there are departments of pharmacy and dentistry it should be learned to what extent the students are taught together and the differences, if any, in the preliminary requirements.

2. FINANCES.—The income from students' fees, endowments or other sources should be learned, as well as the various items of expenditure. Financial statements should be studied if available. The number of students enrolled and the tuition fees should be noted.

3. FACULTY.—The relation of the faculty members to the various chairs should be learned, and, when chairs are vacated for any reason, how successors are chosen. The number of salaried instructors should be learned, the amount of time devoted to teaching and the subjects handled by each. The qualifications of the faculty members is, of course, a matter of much importance.

4. ENTRANCE REQUIREMENTS.—The entrance records should be inspected and also the original credentials handed in by the students. Special note should be made of the institutions granting the credentials and from any source possible a knowledge of these institutions obtained in order that a proper valuation of the credentials can be made. If any outside party, such as a high-school principal or the county superintendent of schools, passes on the credentials or conducts the entrance examinations for the medical college, he should be interviewed and his methods learned.

5. ADVANCED STANDING.—The methods of granting advanced standing from other institutions should be learned and note made of the medical schools from which credentials have been accepted.

6. LENGTH OF COURSE.—The dates of beginning and ending the sessions should be obtained and inquiry made regarding holidays, time allowed for matriculation and the requirements of attendance at classes.

7. CHARACTER OF THE CURRICULUM.—The lecture or class schedule actually in use by the college should be studied to learn whether the course is graded, to see what subjects are being taught and by what methods; lecture, laboratory or clinic. If clinics are mentioned it should be learned whether they are held at the college dispensary or at hospitals, and what hospitals.

8. BUILDINGS.—The condition of the buildings as regards care and utility should be noted. Ample space for the accommodation of the classes and ample provision for light, heat and ventilation are of more importance than architectural beauty. General cleanliness is important since aseptic methods cannot well be taught in filthy buildings and laboratories.

9. LABORATORIES.—The number of laboratories, the subjects taught in each, the equipment and the evidences of recent active work are of much importance. This furnishes a fair idea as to whether or not the college is keeping up to date in its methods of teaching. Any

evidences of original research should be noted. The inspector should examine students' note-books, tracings or other evidence of students' work. The presence of an all-time, salaried instructor and the character of his work are usually indicated in the appearance of the laboratory and equipment. According to the subject taught in the laboratory, the following points should be noted:

(a) Anatomy.—The amount and character of the dissecting material should be noted and whether modern methods of embalming are used by which dissection is made more safe and pleasant than by the old methods. The use of cadavers for operative surgery and the use of frozen cross sections, or other prepared anatomic specimens, charts, or other modern adjuncts should be noted.

(b) Physiology.—In any laboratory which is at all equipped for teaching physiology the inspector will invariably see such apparatus as kymographs, levers, time-markers, electrical apparatus, etc. The presence of animals and frogs will be additional evidence of modern methods. Students' individual work, such as note-books, tracings, etc., will furnish a good idea of the work done.

(c) Chemistry.—Here cleanliness is an important consideration. The presence and character of the apparatus and reagent bottles will indicate whether the work is limited to general chemistry or whether organic and physiologic chemistry are also taught. Outlines of the courses taught should be studied if available.

(d) Histology and Embryology.—The supply and character of microscopes, microtomes, bottles of blocked specimens, or cut sections will usually be seen. Any additional apparatus such as stereopticons, charts, etc., should be noted. Evidences of active work by teacher or students are important. For embryology the same apparatus and in addition the presence of incubators, charts, models or other adjuncts should be noted.

(e) Bacteriology.—An ample supply of good oil-immersion microscopes is a necessity. Note should also be made of sterilizers, incubators, test tubes, prepared media (potato, gelatin, agar-agar, etc.) and cultures. Cleanliness in this laboratory is of particular importance for the sake of the student himself as well as for the reliability of his work. The presence or use of animals and the manner of caring for them should be noted.

(f) Pathology.—An ample supply of microscopes is necessary, unless those used in histology or bacteriology are easily accessible. The number of gross and microscopic material should be noted. If any postmortems are being done by a careful instructor, there will usually be evidences of it in a supply of preserved gross specimens in this laboratory or in the museum.

(g) Pharmacology, Materia Medica and Therapeutics.—Note should be made of laboratories for these subjects, particularly the first, and any available outlines of work should be studied.

(h) Clinical Laboratories.—Of great importance are the facilities for training students to make the various laboratory diagnostic tests of blood, urine, sputum, etc., and note should be made of any laboratories for the purpose and whether they are amply equipped with microscopes, reagents, stains, burettes, blood counting outfits, etc. Small laboratories for this purpose are sometimes found in hospitals, in which case it should be learned whether the students have regular work there or whether the work is all done by the internes.

(i) Other Laboratories.—Any advanced research, public health or other laboratories should be noted, but particular inquiry should be made as to the part such have in the training of medical students, since that is the chief function of the medical college.

10. DISPENSARY.—It should be noted whether a suite of rooms or a single room or merely the college office is used for dispensary purposes. The sanitary condition of these rooms, the equipment, and the evidences of active work are important. If possible the visit should be made during the regular dispensary hours that it may be seen how many patients are in attendance and what part the students have in the examination and care of these patients. The records of patients should be inspected and the average daily or weekly attendance noted.

11. HOSPITALS.—All hospitals at which the college claims to hold clinics should be visited and evidence obtained regarding the actual attendance of students. The average number of patients in the hospital and particularly the average number of free or ward cases which can be used for teaching purposes should be learned. The number of clinics per week held in each hospital should be noted and whether they appear on the lecture schedule or not. The amount and character of the work done by the students in the examination and treatment of patients is of particular importance, as well as the opportunity for training in the various departments of medicine, surgery, gynecology, obstetrics, pediatrics, etc.

12. MATERNITY WORK.—Special inquiry should be made regarding the number of cases required of each senior student, the extent of the student's responsibility in the handling and care of each case, the number of cases obtained and where they are obtained. Maternity wards of hospitals should be visited and the actual number of patients noted.

12.—LIBRARY.—If the college has a medical library, note should be made of its accessibility to students and the arrangements for the students' comfort, the presence of a librarian, the number of modern and useful text and reference books and the number of useful medical periodicals. Only too often there will be found a lot of old, out-of-date volumes of no particular use to medical students. Of far more importance than the mere presence of a medical library are the evidences that it is used and useful in the training of medical students.

14. MUSEUM.—It should be noted whether there is a good supply of modern useful anatomic, pathologic, surgical, obstetric or other specimens or whether the collection consists merely of old, useless curiosities; whether the specimens are labeled; whether an index is kept and, in connection with the pathologic specimens, whether the clinical histories are systematically filed for reference. In fact, the important point, as with the medical library, is the extent to which this museum is used in medical teaching.

15. SPECIAL FEATURES.—Note should be made of any special features, such as freezing plants for preserving cadavers, animal houses or dog hospitals, and of any special apparatus, as reflectoscopes, Roentgen-ray outfits, charts, models, manikins, etc.

16. SUPPLEMENTARY INFORMATION.—Besides the information obtained directly through the inspection, other sources should be looked to for whatever will aid in forming an accurate idea of what the college is doing. The finished product, the graduates of the colleges, should be considered. The success or the failure of its graduates at state license examinations, their success and standing among practitioners and educators, the places they secure in hospitals, public health positions and elsewhere wherein they can show the training received while in the medical college—all these facts are of much importance.

OTHER FACTORS

This outline has not been given with any intention of indicating a complete equipment for any medical college, nor should there be any fixed requirement of equipment any more than there should be a hard and fast curriculum. After all has been seen and learned, much must be left to the judgment of the inspection committee. While the entire absence of equipment is serious, the mere fact that apparatus is present is of little consequence. There may be dissecting tables, but no anatomic material and other evidence may lead the inspectors to believe that no dissecting is done. There may be a stereopticon, but close observation will show no connections to allow of its use. In one state where a fixed supply of apparatus is required by the examining board, colleges were found with a full supply, but having no one who knew what the various articles were for nor who was capable of making use of them. There may be beautiful buildings or an abundance of dispensary and hospital material but an absence of proper supervision so that little use is being made of them. There may be a large, well-stocked library, but inquiry reveals that it is closed except for a few brief hours each week, or it is otherwise inaccessible to the students. A college may have an abundance of expensive apparatus in its laboratories, but investigation may show that enormous classes, not only in medicine, but in dentistry and pharmacy, may be crowded through the course in a wholesale manner bewildering to the student and very detrimental to his training.

On the other hand, a college may have a comparatively meager equipment, but there may be many evidences of careful oversight, showing that a splendid course, including laboratory training, is being given. So long as the equipment is being used, it is probable that the simplest, possibly home-made, apparatus is to be preferred, since the student will be more apt to provide himself with such apparatus and continue his laboratory methods after he goes into active practice than he would if his training was altogether with complicated and expensive equipment.

An accurate knowledge of foreign medical education should be obtained, not only to see how the standards abroad compare with those of this country, but that any strong points may be adopted and the weak places avoided. As before stated, this is a comparatively new country without a fully developed educational system. There will be much benefit derived, therefore, from a study of educational systems of foreign lands which are the result of several centuries of development.

The investigation should be an effort to obtain from all possible sources all the facts regarding medical education, bearing in mind that the teaching of medical students is the first work of the medical school. The chief aim in the fixing of any minimum standard should be that the finished product of our medical schools may be well trained and fully qualified physicians. Before any committee can draw up an acceptable minimum standard it must obtain complete knowledge of the weakness in our system of medical education as well as of the points wherein we excel, and the only way to obtain that knowledge is by a thorough investigation of medical education, including the actual inspection of every medical college.

103 Dearborn Avenue.

Charity.—If all the money available for charitable distribution were properly expended, the suffering of the unfortunate would be much more largely limited than it is under present methods.—B. E. Nelson, in *Hygiene and Physical Education.*

THE METHODS AND THE OBJECT OF STATE EXAMINATIONS*

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In any discussion of this subject it would seem that at the outset certain general propositions may be stated to which all will agree. Certainly the primary object to be attained by an examination in medicine conducted by the state is to certify that certain individuals are capable of rendering useful service to the citizens of the state in matters pertaining to health. The law in this respect has a certain analogy with the pure food laws. The public realizes that it is unable to distinguish the false from the true, and places the matter in the hands of a committee or board who by proper methods of inquiry will make this differentiation and give the approval of the state to the true wares. In the pure food laws the differentiation is easily made by the application of tests, which, though they may vary somewhat in complexity and difficulty, are sufficiently accurate. When the objects of test are individuals instead of chemical substances, the test is much more difficult and the responsibility of the testing is much greater.

To these matters the general public which is the most concerned show an indifference which is founded on ignorance. Both the pure food laws and the medical-practice acts have been forced on a public indifferent and often distinctly hostile. Medicine is destined in the future, to a greater extent than it has in the past, to play an important, perhaps the most important, rôle in the social life of the people. Nothing is of so much importance to a nation as the health of its people and the vast possibilities of preventive medicine are just beginning to be appreciated. The realization of preventive medicine will be possible only when the present ignorance concerning disease and distrust of preventive measures are replaced by knowledge and confidence. It has seemed to me that a part of the distrust which has found expression in the satires of every nation is warranted, for medicine in the past has been influenced too much by dogma, by empiricism and superstition; even now these influences have not disappeared.

What are the qualities which we are warranted in insisting should be the result of the training of the student and which he must possess to render efficient service? I do not hesitate to give the first place to knowledge of methods and familiarity with their use and application. Modern medicine is, in fact, based on methods which enable us to find out what is taking place in the sick individual. We no longer conjecture, but we ascertain by the use of our senses and by methods which represent an extension of the senses. Medicine has advanced far on the path followed by the sciences, and the medical art is now to a great extent based on knowledge which in many cases enables us to predict. There is no longer conjecture as to whether a patient has a certain infectious disease, or whether there is a certain disease of the blood or the blood-forming organs, or whether digestion is taking place in a proper manner, but the problem presented by the sick individual can and should be definitely solved by the application of tests. The knowledge on which action is based must be derived from the sick individual; it can not come from books. The records of observations and

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experience are no doubt valuable, but the limitations imposed by such knowledge alone are enormous. In the first place, there are few diseases of which so accurate a description can be given that recognition of the disease is possible by a comparison of symptoms with the records. The actual diagnosis is not the final matter, for the treatment is directed not to the disease, but to the condition which the disease produces in the individual. The medical man must have such knowledge of disease as to know whether in a given case the disease may extend from the individual to others in his vicinity or remotely, in what way the extension takes place and how it is to be guarded against. In surgery there are not only the methods of diagnosis, but the chemical and mechanical methods of treatment. The medical man must not only be able to use all these methods, but must be able to make the deductions which are justified from the knowledge obtained by methods.

We must go further. We are justified in demanding not only facility in the use of methods, their application and the proper use of knowledge gained by observation, but we also must demand thorough training in the fundamental branches of medical science. This for two reasons:

First, it is necessary in order that the student may acquire the habit of mind which will enable him to distinguish between proof and statement, knowledge and conjecture, which will lead him to appreciate new knowledge, and to strive constantly to increase both his own and the sum of knowledge. We are certainly much more appreciative of new knowledge at this period than ever before, and yet it has taken a long time for the body of physicians to become thoroughly aware of the fact that tuberculosis is an infectious disease. Such knowledge as that regarding the nature of malaria and its mode of extension, the mode of extension of yellow fever and of plague should extend much more rapidly than has been the case. When medical men have been called on to deal with situations in which knowledge of disease should have governed their actions and enabled them to cope successfully with the conditions, have they not frequently proved themselves to be ignorant or at least unappreciative of new knowledge? We might cite typhoid fever in the Spanish war, in which case there was certainly enough knowledge of the disease and the conditions of its extension to prevent the appalling loss of life, and the plague in San Francisco, the existence of which for so long a time was unrecognized or denied. Have we any assurance that the conditions of 1898 would not be repeated in case of another war? How much confusion remains as to the diagnosis of malaria and typhoid fever when their differentiation is so simple!

Second, the knowledge of the fundamental sciences is necessary because it is of constant use. The laboratory teaching which is becoming such a prominent factor in medical education gives the proper mental training and the objective knowledge. Medicine is a branch of biology in which the phenomena of living matter in an abnormal environment are studied. How ineffective must be such study when not preceded by study of the phenomena of living matter in a usual environment!

How shall these necessary qualifications be determined? It is obvious that the diploma of the medical school can not be accepted as evidence that the holder possesses the proper training and knowledge. If the state certifies to fitness it must itself determine this either by taking over the education, as in a state university, or by an examination. It has been found, however, that even when the state gives the education a final examination to test its character is necessary. In certain of the states some supervision of the medical schools is exercised through the board of medical examiners. There would seem to be no doubt that such supervision is capable of a salutary influence on medical education. There are two dangers connected with it:

1. It is difficult to make the supervision effective—to see that the medical schools really conform to the conditions imposed by the state board in their actual conduct and do not merely insert the conditions in their catalogues. It would be difficult to obtain any real idea of the state of medical education in the country by a diligent study of the catalogues of the schools. A catalogue is a very human production and, consciously or unconsciously, the imagination has a pretty free play in its formation.

2. If, on the other hand, the supervision is real and effective, it can easily be meddling. All who are engaged in teaching medicine must realize that medical education is now in a very unsettled condition. The subject-matter has enormously enlarged, and there is undoubtedly the attempt to teach too much, to hold on to the old traditional teaching and to add the constantly increasing new knowledge. Thirty years ago the only laboratory in the medical school was the dissecting room in which human anatomy was taught, usually by a man who had no conception of the general subject and who took the time for a course of lectures out of a busy practice, his anatomic teaching being, in commercial parlance, a by-product. The laboratory side has now developed enormously and there is a feeling which seems to be more prevalent in the laboratory than in the clinical teachers, that the laboratory unconnected with the clinic has been unduly developed. In the present conditions in our medical schools, in which there is, save in a few fortunate instances, no real amalgamation between the school and the clinic, no power of appointment by the school of its clinical teachers, it has been easier to develop the laboratories and to consume in them a large part of the obligatory four years. There is in most instances too sharp a separation of the laboratory and the clinic and lack of application to clinical problems of knowledge derived from laboratory work. There is less uncertainty with regard to the advantages of a preliminary training in science before medical studies are entered on, but there is much uncertainty as to the extent of preliminary training which should be demanded. Depend on it, those engaged in medical teaching will work out these problems better than an outside body. As I have looked over the requirements for examination in certain of the states it has seemed to me that the element of protection has entered into demands of some of them. A definite curriculum of study is demanded by some, and in certain instances the requirements directly conform to the scheme of medical education in the state universities. Certainly this serves an end, probably an important one, in bringing the entire scheme of legislative protection into disrepute, but this is not the end aimed at. After carefully weighing in my mind the advantages and disadvantages of state supervision and control of medical education, I think more is to be gained without it and that medicine had better be on a square free trade basis.

The most effective control combined with perfect independence in medical education can be exercised through the state board examination and on the character of this everything depends. The present method of these examinations is unsatisfactory and has about reached the limit of its usefulness. The examination consists in giving a number of questions on the different medical subjects, the answers to which are written out and afterward marked by the examiners. In conducting the examination there are various more or less elaborate rules, the reading of which gives one a rather pessimistic view of human nature, which are designed to prevent impersonation and other forms of cheating. Written answers to questions can not test the candidate's knowledge. They may test information which he has acquired from reading or lectures. They form no test of his power, of his ability to carry out methods of work, and to apply these methods in the treatment of disease.

I have recently examined a book compiled by Dr. R. M. Goepp and published by Saunders & Co., entitled "State Board Questions and Answers." The stated purpose of the book is "to provide a convenient compend for the use of those who wish to prepare themselves for the state board examinations." The material embraced in the 631 pages is selected from state board questions asked during the past four years, the preference being given to those asked in the larger and more representative states. The collection of the questions was undertaken by the publisher, the author, with the assistance of several persons named in the preface, being responsible for the answers only. The first impression on going over the questions is that they are rarely so framed as to bring out any exact knowledge in the answer. They are text-book questions compiled from text-books, which are themselves compilations. All of the old questions for which definitions of formal content could be given are there. The answers are generally unsatisfactory, often vague, often inaccurate. Many of the questions would really demand rather a discussion of a subject, from which discussion valuable information of the candidate's knowledge could be obtained, than a categorical answer. For instance, to the question, "Give a general explanation of the pathology of edema and include its chief factors," the answer is given in sixty words. Still, after an examiner had gone over 100 books, he would probably be thankful for the concise answers, even though in many cases it would be difficult to interpret their meaning. The book serves a valuable purpose in one way, for it ought to be possible for a good student well versed in examination methods, and with expert tutoring which would involve some elimination of unusual questions, to pass any written state board examination, after three months' close study—this without having ever seen a patient or the inside of a laboratory. Certain of the poorer medical schools, knowing that their men must pass the state boards or they must close their doors, have adapted their instruction to this end with great success; and such books as that referred to will prove a valuable addition to the library of both teacher and student. Whether the scrappy and often false information obtained by the study of such a book has any other value is uncertain.

The examination, to be effective, must be practical. The candidate must show, not what cramming, but what medical training he has had and what he can do with the knowledge he has obtained. At the first sight there would seem to be many difficulties involved in the change from the written to the practical, but they are not so serious as they appear to be. It has been found possible in other countries to base the grant by the state of authority to practice on an examination of practical character, and it seems really absurd to say it can not be done here. We have only to adopt methods which are practical, which have been tried and approved elsewhere. Such examinations would undoubtedly demand the use of laboratories and of hospitals for their conduction, but they could be obtained. Examinations should not be held in cities where such indispensable aids can not be obtained.

The simplest part of the examination would be in those divisions in medicine in which the instruction is given in laboratories. Arrangements could be made by the examiners for the use of the laboratories in which the instruction is given. All good schools require a practical examination in anatomy, histology and embryology, physiology, physiologic chemistry, pathology, and bacteriology, and no difficulty has been found in giving it. In all of these branches the examination would doubtless include the recognition and description of specimens, and the demonstration of ability to do the technical work demanded by the study. In addition to this, a few wisely chosen questions could be given to show that in addition to technical ability the candidate has some appreciation of underlying principles and of the bearing of the study. In anatomy a part of the examination should be devoted to the demonstration of regions on the living model. With these examinations could very properly be included the examination in clinical pathology, covering such matters as the chemical and microscopic examination of the urine, stomach contents, feces, blood, etc. For this last examination certainly more time would be required than for any one of the others and the marks given should be based on the time required and the importance of the subject. A student might very well be passed who had hazy ideas about bones, ligaments, and muscle relations, or who failed to detect the differences in appearance and structure of certain nearly related tumors or who had unconventional ideas as to cell origins, but inability to examine sputum, urine and blood should cause his rejection. With the time which is given in all schools to laboratory work we are warranted in giving a rigid examination in the laboratory branches and in demanding that the work should be of such a character as not only to give the necessary discipline, but to teach thoroughly those procedures which are to be used in practice and on which the accuracy of clinical work chiefly depends.

These examinations would consume not less than ten hours, with some leeway allowed to the slower men, and should be distributed over two days. The candidates could be divided into batches of twenty-five and the examinations conducted by one chief examiner and one assistant. In such an examination it would not be necessary to take any very elaborate precautions against cheating. The question very properly comes up as to what time in the medical course such an examination should be held. I think, on the whole, it would be better to allow candidates to take it either in the middle or at the end of the course. This would give the advantage of weeding out at an early period the men who were totally unfit and of allowing some who failed to go back and make up again. The candidate should be passed or rejected on the examination as a whole and

not allowed credit for any single branch. I have estimated the expense of such an examination at $1,000 for 100 men examined at one period. This allows $25 a day for three days' work of the chief examiner and $15 a day for the same time of the assistant, and $160 for general expenses in providing apparatus, etc. It is possible that this is too little, but for many reasons it is not desirable to place the remuneration of the examiner at too high a figure, and the element of rendering service to the state should enter into the compensation.

The second part of the examination embraces the purely clinical. It should be thorough and practical. It will be necessary to have patients and to make some use of a hospital. The patients may be selected chiefly from the dispensary ambulant material, and among these cases can be found illustrative of the more common diseases of organs. The candidate should be given the necessary appliances, chemical and physical, to be used in diagnosis and should show not only his ability to use them, but to understand their use. How much use would be made of acute cases in the wards is uncertain. Certainly in the beginning of this method of examination it would be well to excite just as little opposition as possible. Any objections on the part of the patients themselves to their being used for examination purposes could be easily overcome by a small fee. It would be well, of course, to include with the sick a certain number of the normal. The examination in surgery also would offer no difficulties. Numbers of surgical diseases can be found in the ambulant material, both acute and chronic conditions, which could be diagnosed, described, and treatment indicated. Certainly a part of the surgical examination should consist in the preparation of a patient for an antiseptic operation both under conditions in which all appliances are at hand and under more primitive conditions likely to be encountered. The examination should also deal in some measure with psychiatry, that greatly neglected branch of medicine. It is entirely possible either to take the candidates to an asylum for examination or to use cases which could be brought to the examination rooms. The candidate should demonstrate his ability to diagnose the more common forms of insanity.

It is probably not possible to conduct a practical examination in obstetrics and gynecology. In obstetrics the manikin can be used with advantage, but this would have to be supplemented by the written or oral examination. It might be possible to introduce a few cases of early pregnancy among the ambulant cases and have the candidates understand that they might be required to examine such a case. Just as in the primary laboratory examination certain questions might be asked for written answers, and it would be much better that histories, diagnosis and treatment of cases assigned should be written. I do not think it would be necessary to conduct special examinations in the skin and other specialties. Among the cases selected, patients illustrating many special pathologic conditions could be included and given out for examination. The candidate could not tell whether he would receive a case of psoriasis or laryngeal tumor, diabetes or chronic disease of the kidneys or liver. In any case it is essential that he be given the apparatus for diagnosis and opportunity for its use.

The examination in hygiene would be partly covered by the examination in chemistry, bacteriology and physiology, and if all the other examinations were successfully passed it might be assumed that the candidate would know the most essential matters in the subject. Such an examination would probably consume ten or twelve hours, and for 100 men examined in groups of twenty-five would extend over three days and would probably require six chief examiners and six assistants who would receive the same compensation as in the first examination. I have thought that such an examination, allowing liberal compensation for patients, for use of apparatus, etc., could be held for $1,500 for 100 men. This gives the cost of the entire examination at $25 per candidate. This is, of course, the bare cost of the examination with a proper compensation for the examiners, and it does not seem to me that there should be much additional expense. A permanent secretary who would have to give some part of his time to the work would be necessary, and some expense in addition would be incurred. I see no objection whatever to raising the fee sufficiently to include such expenses. The fee with a corresponding lengthening and increase in the efficiency of the examination might be made $50 or even $100. Of course, difficulty would arise in regard to the medical sects, but these sectarian differences chiefly or only concern therapeutic measures, and the sectarian candidates who had successfully passed the other examinations could be turned over to sectarian examiners for the therapeutic examination. No osteopath, homeopath, eclectic, hydropath or Eddyite could object to their candidates being required to show practical knowledge in anatomy, physiology, chemistry, clinical methods, and the general features of disease. Certainly we would feel that such men were to be trusted, no matter under what banner they chose to serve.

The final examination should be given to candidates only who have successfully passed the primary. Whether the two examinations are taken separately or together may be left to the choice of the candidate.

The objections which have been urged against this practical examination have never concerned the real question as to whether or not it is the best method, but have been mainly on the score of expediency. I can not help quoting the objection urged by the president of one of the state boards. He says:

> "We examine for instance at a single examination four hundred applicants. All of you gentlemen I take it are practitioners of medicine: are there any of you who have had a patient in the hospital that you would be willing to have these four hundred men pound on the chest to ascertain the condition of his lungs, or to see whether he had a heart lesion or not? I don't think you would."

Such objection does not have to be met. At any rate his board could not give a practical examination for the fee demanded, $10. Another objection is on the score of expense. I have shown that the examination can be held for the fee charged by most of the states and the examiners paid. It is absurd to think that men capable of giving a proper examination can be obtained without compensation. A third objection is that the examination will take more time than the written; and this, of course, is true. But the candidate at about this period of life has plenty of time, the examiners are compensated for their time, and the thorough examination has great educational value. A fourth objection which has been urged is that the candidates may be known to the examiners and favoritism shown. This is a pretty low objection and it does not hold, for there are many examiners, and a candidate who passed one examiner by intrigue or favoritism

would be pretty sure to be rejected by the others. If a candidate has the qualities which would incline all the examiners to favor him regardless of the knowledge shown, he might be a useful man in the profession.

The last objection, and probably the most serious, is that the state boards as at present constituted are incapable of holding such examinations as are here indicated. The men in every state who are most capable of conducting proper examinations and who have hospital and laboratory connections which afford facilities are generally teachers of medicine, and as such are excluded from examining boards, and there is some justification for this. Men who have been a number of years in practice and who have not had special training are incapable of holding proper examinations in many of the subjects in medicine. I regard the examination as the most difficult part of my work; and how can a man without special training examine in such subjects as anatomy, physiology, bacteriology and pathology? The difficulty, it seems to me, could be met by appointing men as examiners who had made themselves capable by a special training to this end. Among the recent graduates of medical schools, men perfectly capable of acting as examiners or who could make themselves capable by work directed to this end can be found. I hold, however, that if a man has not had the training and has not the knowledge which qualifies him for the position of examiner in a subject he should not accept the position if offered him.

I can not close this paper without apologizing for my temerity in offering advice to men who have a most difficult position to fill and whose work has been faithfully performed and of great benefit to the public, to the medical profession, and to education. But it has seemed to me that by a somewhat radical change in the method a very much greater amount of good can be accomplished. The position on the state board of examiners is one of great responsibility, for on their action depends the value of the relation between medicine and the public, and they hold in their hands a lever of immense power; in fact, they are the chief agency for the uplift of medical education. At the present time there is no medical position in state or university which is of equal importance and responsibility. I know that there are difficulties in the change in the method of examination which I have advocated, but the difficulties are not so great as those which were in many states overcome in the establishment of medical examining boards.

These difficulties may not be overcome at once, but they finally will be. Let us convince ourselves that we want to find out whether or not a man can do properly the things which are demanded in the practice of medicine, and that we can not find this out by asking a question and requiring a written answer, but we can demand that he show us his ability. We would not test a bricklayer's ability by questions and written answers, nor can we test any art in the same way. A painter must be able to paint; whether he can describe the process or not does not much matter. Medicine is an art, and its success depends on the proper use of many methods. I am further convinced that it is most important to begin the change in examination methods and to begin along the line of least resistance, adding more and more subjects at each examination. I will not admit that the plan is not capable of being carried out, and it is our part in every way to assist the state boards in carrying out their arduous task.

THE MOVING PICTURE SHOW

A NEW FACTOR IN HEALTH CONDITIONS

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The development of the cheap moving picture and musical theaters as factors in the health of the community seems to have escaped the notice of the medical press. To-day every village and hamlet in the United States boasts a moving picture show. In the large cities of the north and east it is not unusual for a hundred and often more to be in operation. In Europe they are outnumbered only by the public houses and cabarets. As is well known, the great majority of these theaters exist where the population is greatly congested, as in tenement districts and laboring settlements. The reason for this is obvious. It is the patronage of the poorer classes which makes the moving picture industry a paying proposition. These cheap theaters are usually located in old rookeries or poorly paying commercial sites, as abandoned shops of small tradesmen, etc. In the construction or building alteration of these places for their special needs the one object in view is to obtain a maximum seating capacity in as small a space as possible. No attention whatever is paid to ventilation and not the slightest heed given to the simplest sanitary details. The health or comfort of the patron is a secondary consideration. Municipal regulation is limited to fire prevention and safety exits—and this only after several serious catastrophes.

The performances are continuous, and thus an ever-moving stream of humanity, constantly passing in and out, stirs up dust and dirt that verily reeks with tubercle bacilli. The programs in these resorts have been considerably lengthened owing to the keenness of competition. The result is that an audience is confined within these ill-ventilated and poorly sanitated amusement resorts often for more than an hour and a half, breathing in air which has become befouled and disease-laden through lack of sufficient air capacity. The superabundance of carbon dioxid and organic matter in the air gives rise to sick stomach, headache and a drowsy feeling. The small fee of admission is responsible for a class of patronage which is entirely oblivious of the simplest health precautions. Spitting on the floor is a common practice and is allowed to go unnoticed. Signs calling attention to the dangers of the vicious habit of indiscriminate expectoration are rare. The use of the electric fan in certain of these resorts, while refreshing to the overheated patron, also serves to dry up the sputum with greater dispatch, thus increasing its disease productiveness. Cleaning the premises is impossible during the hours of operation, which gives some idea of the amount of filth that accumulates.

Robust and vigorous individuals employed as singers and musicians, appearing as often as twelve and thirteen times a day in these crowded resorts, soon undergo a remarkable change of health. Poor ventilation produces not only discomfort and loss of energy, but greater susceptibility to disease, especially tuberculosis. Many of the singers are raw amateurs and know nothing of the care and preservation of the voice, and in many instances a voice capable of greater things is lost to the public through exposure to such unfavorable conditions. Laryngeal troubles are a frequent source of annoyance to this class of people through excessive vocal effort and constant confinement. I have treated many of the singers employed by the cheap moving picture shows and found the majority of them to be of a decided phthisical tendency. The film operator who is confined in a small

cubby-hole at an exceedingly high temperature falls an easy prey to tuberculosis. Constant attendance at the scene of employment, coupled with the irregularity of meals and uncertain hours, is responsible for the fact that many of the male artists become alcoholics. Taken all in all, the cheap moving picture theater artist has no easy task and sooner or later another victim is enrolled under the banner of the white plague.

The general practitioner is often consulted by a patient complaining of headache and burning eyes which run water as soon as they come in contact with strong light. After a thorough examination, including urinalysis, the patient is referred to an ophthalmologist in order that a refractive error may be corrected and the patient relieved of the headache and the visual irritation. In a great number of cases the ophthalmologist will report that there is no error of refraction and that he is unable to account for the headache and the running burning eyes. An inquiry into the habits of the patient will elicit the information that he is a devotee of the moving picture show. The constant gazing on a rapidly moving and scintillating film with every mental faculty alert to maintain the connection of the story is sufficient to produce an eyestrain of great severity and thus cause headache and burning eyes. The only remedy is rest and cessation from this form of amusement. After a few weeks vision becomes normal or nearly so and no ill results are experienced unless the patient resumes his former habits. In many cases the eye trouble assumes a severity that calls for long and persistent treatment on the part of the ophthalmologist.

Moving picture shows in tenement districts and labor settlements should exhibit pictures that tend to elevate the mind and improve the moral condition of their audiences. Pictures portraying scandal, illicit amours and criminal cupidity very often have a debasing effect on a mind that is already morally warped through environment and surroundings, thereby bringing to the surface a latent criminality. If the moving picture shows are to remain, radical changes must be made.

Rigid inspection by the health authorities is absolutely necessary. Proper ventilation by means of exhaust air fans, airifiers and other ventilating appliances and numerous apertures with sufficient air intake must be provided. The number of cubic feet of air necessary for health should be determined by the seating capacity. The flooring should be oiled, not carpeted or covered with dust-gathering material. Plush-covered and velvet-covered seats should also be prohibited for obvious reasons. Suspension of the performance at the end of every five hours, when the orchestra or seating hall should undergo a thorough cleaning, is of urgent necessity. The cleaning could be accomplished within forty-five minutes by the aid of the vacuum cleaner and should be followed by a draught of pure air throughout the place, if possible. At the termination of the day's performance the whole resort should be given the proper sanitary attention. Signs should be conspicuously posted as to the evils of spitting.

CONCLUSIONS

That a great deal of eye trouble is due to moving picture shows can not be denied. The singers, musicians and film operators of these resorts fall an easy prey to tuberculosis through excessive vocal efforts, constant confinement, irregular habits and long hours. As a disseminator of tuberculosis the moving picture theater ranks high and it will become necessary to enact special health laws to remedy the evil.

2131 Baronne Street.

HELP THE MOTHER NURSE HER CHILD

A PLEA TO PHYSICIANS NOT TO BEGIN ARTIFICIAL FEEDING WITHOUT FIRST TRYING TO HELP THE MOTHER MAINTAIN HER MILK SUPPLY *

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That no artificial food can take the place of breast-milk has always been admitted, even by those who have had the most success with artificial feeding, men like Holt[1] and Rotch.[2] In some parts of this country, however, it is uncommon to see any attempt made to induce a mother to nurse her child, even when her breast-milk has not been examined to see whether it was abnormal or not. Is this not chiefly our fault—that is, the fault of the physicians?

Not only are no efforts made three to four days after birth, but later, when the child is between three and six months old, breast-feeding is often stopped for no apparent cause, here again without examination of the milk to find out its composition. Would it not be more just to the infant first to try to help the mother so improve her supply of breast-milk that there may be enough for the child, for some months longer, at any rate?

Baginsky[3] states that any other food than woman's milk requires considerable work from the infant. Chapin[4] declares that "normal maternal milk supplies the necessary quantities of fat, proteids, carbohydrates, etc., for proper structural development and maintenance of the vital processes, in forms that automatically adapt themselves so as to develop the digestive functions of the growing animal." Rotch,[5] with interesting detail, gives the principles, diet and exercise chiefly, which produce variations in mothers' milk, basing his results on frequent examination of the breast-milk in question. Holt[6] also discusses the value of food, drink and exercise in bringing about changes in breast-milk. He lays stress on examinations of the mother's milk also. Griffith[7] says:

> The possibility of improving the quality or quantity of breast-milk must never be forgotten before weaning is advised. An alteration in the diet, in the quantity of liquids taken and in the amount of exercise employed will often attain the result desired.

Morse,[8] in a most interesting article, says:

> The nursing woman ought to lead her usual life and not be treated as an invalid. . . . She should take her usual food, but more of it. . . . She must have light and air and must not be shut up in the house. . . . The best method of increasing the quantity of breast milk is the use of the breasts. . . . Within reasonable limits, the more taken, the more there is produced. Other methods are entirely subordinate. Among them may be mentioned, first, improvement of the general condition; second, a liberal diet.

Jaschke,[9] in his excellent monograph on the importance of breast feeding in the struggle against infant mortality, ridicules any special article of diet or

* Read in the Section on Diseases of Children of the American Medical Association, at the Sixtieth Annual Session, held at Atlantic City, June, 1909.

1. Holt, L. E.: Diseases of Infancy and Childhood, 1897, p. 126.
2. Rotch, T. M.: Pediatrics, 1901, p. 116.
3. Baginsky, A.: Berl. klin. Wchnschr., 1900, No. 17.
4. Chapin, H. D.: New York Med. Rec., Dec. 12, 1903.
5. Rotch, T. M.: Pediatrics, 1901, p. 141.
6. Holt, L. E.: Diseases of Infancy and Childhood, 1897, p. 164.
xxviii, 271.
7. Griffith, J. P. Crozer: Am. Med., May 3, 1902.
8. Morse, J. L.: Phys. and Surg., March, 1907.
9. Jaschke, R. T.: Monatschr. f. Geburtsh. u. Gynack., 1908,

drugs, referring to Finkler's list,[10] and states that the best galactagogue is the nursing infant. He insists only that the nursing mother be well nourished. Schlossmann[11] and Engel[12] believe that the nursing mother may eat whatever she pleases.

Notwithstanding these and other unquoted opinions, it has been my lot to find that much could be accomplished in every case by persuasion, encouragement, advice and perseverance, even though the mother dislikes the idea of nursing her child and decides not to do so. Later, when the baby is several months old and the mother believes her milk no longer to be as nourishing or as plentiful as it had formerly been, much can again be accomplished if directions are correctly carried out.

Old as is the recognition of the fact that every well woman ought to nurse her baby (and only recently Walcher[13] has shown that no actual diminution in the ability of women to nurse their offspring can be demonstrated anatomically) it was never so important as at present when the success following the use of cows' milk mixtures (and, unfortunately, the popularity of the proprietary infant foods) have made the use of the infants' bottle seem almost a necessity. That one or two bottles daily, given when the baby takes his nap, or to allow the mother time for fresh air and exercise, can do no harm has been shown by many careful observers, provided the mother follows other directions rigidly.

Since the appearance of Dr. Southworth's article[14] on this subject, in 1902, I have urged all those with whom I have come in contact, socially as well as professionally, to continue breast-feeding until the baby is at least eight or nine months old. In contrast to the subjects observed by many in cities, the mothers I have treated have been normal women or nearly so, and on this account, perhaps, my directions have resulted successfully.

During the last few months of pregnancy, not only should the nipples receive daily attention, but every pregnant woman should cultivate the excellent habit of drinking water. It is well to have a pitcher of drinking-water always near at hand so that she may drink frequently. She should learn to drink without discomfort three quarts or more every day. The value of large amounts of drinking-water during pregnancy has also been urged by Holloway[15] as tending to prevent the toxemias that so readily occur from retained products of metabolism. Other rules of decided importance during pregnancy are: exercise in the open air, a walk or drive, or in bad weather a walk on a piaza or in a room with windows open; sufficient sleep, not only eight to ten hours at night, but also a nap of two or three hours every afternoon; correct, wholesome, plain food and enough of it (red meats to be taken sparingly); and the regular daily evacuation of the bowels, brought about by regulating the food, water and exercise, although it is sometimes advisable to add some mineral water, besides.

After delivery it is most important that the mother take daily three or four quarts of water, some with meals and a great deal between meals. This is not difficult if the woman has grown accustomed to drinking large amounts of water daily during pregnancy. Tea and coffee should be absolutely prohibited during lactation. Next in importance should come the thin corn-meal gruel advocated so strongly by Dr. Southworth. This is easily made, boiling one or two tablespoonfuls of yellow corn-meal in a quart of water for five hours, in a double boiler, with the lid on. It may be flavored by putting in ten or fifteen large raisins, a little salt, wine or nutmeg. It is kept on ice and drunk between meals, poured on ice in a bowl or glass, at 10, 4 and bedtime. The taste is not bad and most women like it. For those few women who like milk and are used to drinking it, a quart or more may be allowed daily; but milk should never be urged on those who dislike it or believe that it disagrees with them. In such cases cocoa prepared with milk may be substituted.

In many women with a tendency to anemia during lactation, the use of one-third or one fourth of a bottle of brown stout (imported), not more, taken with the midday meal occasionally seems of value. Ale, beer and malt extracts are not good, as they tend to obesity, without affecting the milk or the general condition of the woman. In a few of these anemic mothers some iron preparation, such as the phosphates, glycerophosphates or hypophosphites, has seemed of decided benefit. As before delivery, exercise, fresh air, sufficient sleep, enough food, regular bowel movements and a routine existence are to be insisted on. It should not be overlooked, however, that an active cathartic will greatly, though temporarily, diminish the amount of milk secreted. Great stress must also be laid on the regular care of the breasts, washing them both before and after nursing.

Though Jaschke[16] says there is no absolute contraindication to nursing, most medical men prefer not to allow a mother with advanced tuberculosis to nurse her child; and other conditions in the mother may rarely exist which would make nursing injudicious for her. There is a group of nervous women found in cities especially in whom all efforts are apparently wasted, the women growing stout without any improvement in the milk-supply being noticeable. Dr. Southworth's suggestion[14] to give the child both breasts temporarily, alternating with one or two bottles a day, when the mother first begins treatment, will be of value in some serious cases. By this means the mother's supply of breast-milk may be saved.

My notes cover 73 cases, including private and hospital patients during six years. In 24 of these my directions were not followed, or they were carried out incorrectly or for only a short time. In 6 of these cases the mothers were neurotic and grew stouter without any noticeable improvement in the milk. The mothers have carried out directions in 49 cases and have been able to nurse their children to between six and eight months. Directions were given before the birth of the child in 21 cases; in 14 cases the infants were under three months of age when treatment of the mother began; in 9 cases they were from three to four months old; in 5 cases, over four months of age. In only 6 cases was one bottle allowed daily; in 2 cases two bottles were given daily.

At some time between six and eight months the great majority of mothers noticed that their babies cried more than formerly and they soon realized that this was due to hunger. When this occurred, in spite of having conscientiously carried out directions, weaning was first considered. By this time most babies were being nursed

10. Finkler: Zentralbl. f. allg. Gsndhtspflg., 1907.
11. Schlossmann, A.: Arch. f. Kinderh., 1900, xxx.
12. Engel, S.: Diseases of Children, by Pfaundler and Schlossmann, Am. trans., 1, 351.
13. Walcher: München. med. Wchnschr., 1908, p. 2440.
14. Southworth, T. S.: The Improvement of Breast Milk and the Prolongation of Lactation, THE JOURNAL A. M. A., 1902, xxxix, 249.
15. Holloway, T. C.: Kentucky Med. Jour., April, 1908.
16. Jaschke, R. T.: Monatschr. f. Geburtsh. u. Gynäk., 1908, xxxiii, 191.

at 6, 9, 12, 3 and 6; or possibly at 6, 10, 2 and 6, with one night feeding. A cows' milk mixture was first substituted for the afternoon feeding, as most infants appear to take least at that feeding. The first mixture given was composed of 1 ounce of boiled water (or barley-water), 1 ounce of lime-water and 2 ounces of milk (4 per cent. certified, from which the upper 6 ounces from a quart bottle had previously been removed by dipper). After-heating the mixture, it was in most cases given with a spoon; in a few cases, those used to bottles, the baby's bottle was again used. For colicky infants the bottle is to be preferred; and a hot-water bag may be applied to the abdomen during and after feeding. A few days later, when the infant learned to take the entire 4 ounces, the amount given was increased to 5 ounces; then gradually to 6, 7 and 8 ounces, still using one-half milk, with the upper 6 ounces dipped off a quart. By the time the baby took 6 or 8 ounces at each feeding, the milk mixture was substituted for the breast twice daily; in a few more days, for three feedings, and by the end of three weeks the infant was weaned. Then, instead of removing the upper 6 ounces from the quart, only 5 ounces were dipped off; later only 4 ounces.

The baby has now learned to digest the proteid of cows' milk and is learning to tolerate the fat; the strength of the mixture is gradually raised, although it is unwise to exceed 6 ounces of 4 per cent. certified milk (still with the upper two ounces dipped off each quart bottle) in an 8-ounce mixture, 7 ounces in a 9-ounce mixture, or 8 ounces in a 10-ounce mixture, until the child is one year old. Then orange juice and a cereal, such as strained oatmeal, well cooked, may be begun; later, junket, custards, dry toast, soft-boiled egg, etc., may be added. Well-baked potato and baked apples are favorites with some babies.

While special stress has been laid on the feeding, ordinary hygiene should by no means be neglected. The child, as well as its mother, needs fresh air, baths, drinking-water, regular habits of sleep, defecation, etc.

The object of this paper has been simply to reiterate the immense importance of breast-feeding and to report my results, achieved by persuasion, advice, encouragement and perseverance in the overcoming of difficulties, few of which are found on investigation to be as real as young mothers think them. That this experience may help others to obtain like results is my hope, so that every woman may try, for a time at least, to nurse her offspring, an act which is sure to be followed by a generation of stronger individuals and by a great decrease in infant mortality.

118 South Twenty-second Street.

ABSTRACT OF DISCUSSION

DR. H. M. MCCLANAHAN, Omaha: As the school question is of importance after the child is brought into the world, and reaches school age, this question is of importance in saving the child to enable it to live to school age. Recently I have been asking mothers why they weaned their babies, and when they weaned them. Sixty per cent. of the mothers replied that the family physician had told them to do so. Many weaned them within the first two weeks of life because the child cried. Without knowing why it cried it was put on the bottle. I am an advocate of mixed feeding rather than leaving the child without breast milk altogether. If a child is given the breast part of the time, I think the mother is entitled to give it the bottle a part of the time. Breast milk makes the baby more resistant to infections, but our knowledge of mixed milk makes it easier to have a baby partly on the breast and partly on the bottle. The mother should be taught that nothing but organic disease justifies a mother in weaning a baby. If necessary she may give it the bottle as a supplement to the breast feeding if the child does not get enough milk. In text-books on the diseases of children ten pages are given to the subject of artificial feeding and almost nothing to breast feeding and how it may be brought about. Frequently mothers will say to me: "I understand that it is just as well to feed the baby on the bottle." Recently I saw a baby on the fifth day of life. It had a temperature of 105 F. The mother was a primipara. She told me she was sorry she could not feed the baby. By keeping the baby persistently at the breast she is now able to nurse the baby. Those are the questions that lie at the very foundation of the supply of human beings. Seventy-three per cent. of the children in the large cities are foreign born and are nursed by their mothers.

DR. J. P. SEDGWICK, Minneapolis: It is gratifying to see that we are coming out of a state of pessimism in regard to mothers nursing their babies. I have kept a record of private cases I have had since I began practice, as to whether the mother nursed her child and, if she stopped, why, and when she stopped. Some of the answers are so ridiculous that it would surprise most of us if we kept such a record. In the first place, we are led to believe that it is very frequent that breast milk does not agree with the baby. That I believe is a rare condition. I think it is usually a quantitative question rather than a qualitative one. Let me recite one example. A baby had been taken from the breast and put on the bottle on the advice of a physician who had examined the mother's milk, reckoning the amount of cream and protein. The physician found 4 per cent. of protein and for that reason thought that the baby could not be kept at the breast. He got doubtful results when the baby was put on the bottle and very soon the baby and its mother came to me. I could see no reason why the child should not be nursed by its mother; I examined the milk and I got 1.4 per cent. protein in two samples, showing how much harm can be done by inaccurate examinations, and then basing our therapy on such examinations. I am so convinced that it is a general quantitative question that I have scales not only in my office, but other scales that are sent from house to house, allowing the mother to see for herself what the child gets. We should have very accurate data before we take a child from the breast.

DR. L. DUNCAN BULKLEY, New York: For years I have fought for mothers nursing their children. I have not used the scales and I have not analyzed the milk. I am an old-fashioned practitioner, but I am positive that attention to the mother has accomplished results that could not be secured otherwise. Over and over again a mother comes to me and tells me she can not nurse her child. I analyze the urine and examine the mother carefully, and find metabolic or other errors which I correct, and in nearly every instance the mother is given iron. In eczema in small infants I give the mother arsenic and iron and seldom give the child anything internally. Time and again people have spoken of the fact that when I stopped the mother from taking tea the child's eczema stopped. I have seen so many cases of eczema in children in which the mother was given stout, and in which the eczema was cured when the stout was stopped, that I can not help believing that the stout has something to do with the eruption. I believe mothers can be educated to drink milk, but I never give milk with the meals. The mother drinks the milk like water, one hour before her meals. I think the milk should be warm, so I commonly dilute it with one-third of boiling water. The mother's appetite is increased thereby, and the milk does not to my belief, go through the stomach in the usual way: I believe it is absorbed. My directions are that the moment the mother awakens in the morning she should drink eight ounces of milk, with one-third hot water, and that she repeat this one hour before each meal. She should let four or five hours pass after the ordinary meal before taking it. The idea is to supply the mother with milk which she gives the baby.

DR. A. F. FURRER, Cleveland: The frequency with which the mother should nurse her baby is important. It is common experience that mothers nurse their babies too often. "Every time it cries" is the admission (during the day and

all night long). At the Babies' Dispensary and Hospital in Cleveland, the four-hour intervals, after the German method, is in vogue and works very nicely. I believe that if we as physicians instruct the mothers to nurse infrequently more mothers would be willing to nurse their babies.

DR. CHARLES DOUGLAS, Detroit: A little confusion has arisen by not drawing the line between the normal child and a delicate child. Those of us who give most of our time to correcting the damaging results due to our feeding, realize that success depends on recognizing that the digestive power is only so great for each meal and we have to get in enough nutrition within twenty-four hours to meet the needs of the child. We must give the child at each feeding the amount it can digest perfectly and get a proper stool. Then when it becomes hungry we must feed it again regardless of the time since last meal. To be successful we must recognize that fact. I did not notice whether or not the essayist had made any provision for the dilution of the food. I am in the habit of weaning children by gradually introducing a starchy diet. Dr. Ostheimer's plan would certainly appeal to any one doing this work.

DR. JOHN LOVETT MORSE, Boston: Dr. Ostheimer has read his paper before the wrong audience. He should have read it before obstetricians or nurses. The pediatrists are now all awake to the necessity for breast feeding.

DR. FRANK P. GENGENBACH, Denver: Every day, every week, every month, that the child receives breast milk increases its resistance in the battle for existence which no other feeding method makes possible. This is the teaching of Salge, the professor of pediatrics at Göttingen. The Germans try in every way to give breast milk. They would no more have an infant hospital without wet nurses than they would think of having such a hospital without the infants themselves, because they have so many babies who can not be fed in any other way. Some babies will only get along with bottle feeding if that is supplemented with breast feeding, and others can only get along on the breast. The Germans recognize only one contraindication to breast feeding and that is tuberculosis on the part of the mother. Even in cases of mastitis they do not consider it a contraindication, even if a slight amount of pus is present. They believe that so long as the mucous membrane of the throat and mouth are intact there is no danger of infection. For that reason they object to mouth washing because they believe more harm results from the abrading of the mucous membrane than good can come of the mouth washing.

DR. THOMAS S. SOUTHWORTH, New York: In the diet of the nursing mother I believe that milk as a milk maker stands first. Second to that, I place cornmeal gruel. I do not use the latter in such large quantities as formerly. I find that about four tumblers of an equal mixture of gruel and milk are enough, giving the rest of a quart of milk at other times. This gruel should be cooked long to take off the raw taste, and salted to prevent a flat taste; then it should be mixed with milk and it is for most people fairly palatable. When the supply of breast milk is small and weighing shows that the child does not receive enough milk to satisfy it, much good is done by nursing it each time at both breasts. Again, if the fat is high there is less fat from the first milk of breasts than if one breast is stripped. When the number of breast feedings and supplementary feedings are equal, it is imperative that each nursing be from both breasts or else the amount of milk decreases. I am not in accord with one writer who claims that the giving of one or two supplementary feedings to a nursing infant involves a diminution of the breast milk. On the contrary, I think that it often tends to build up the breast milk rather than to decrease it.

DR. MAURICE OSTHEIMER, Philadelphia: I appreciate Dr. Morse's suggestion, for I think the obstetricians are largely to blame. While I realize the value of milk as a food, there is no doubt in my mind that it will cause indigestion in many women, even a very little of it. I have never tried Dr. Bulkley's method, but will do so.

Playground Space.—The London school authorities have determined that fifty square feet is the minimum playground space for each child.—*Hygiene and Physical Education.*

MIDDLE MILK MIXTURES *

ALFRED F. HESS, M.D.
NEW YORK CITY

It is some years since it was shown that when milk is allowed to stand the bacteria are carried upward with the fat globules so that the cream layer contains a far greater number of micro-organisms than the underlying skim milk.

This teaching has been corroborated many times, although it has been frequently forgotten in practice and in experiment. In a study published about one year ago,[1] from the Research Laboratory of the New York Board of Health, I went somewhat deeper into this question, in which by chance I had become interested. As some of those present are acquainted with this investigation, I shall not review the experiments which I undertook in this work. Briefly stated, they resulted in establishing a fact which had not, I believe, been previously noted, namely, that the bacteria which the cream is known to harbor, are not homogeneously distributed throughout its depth, but are present in far greater numbers in the surface cream than in its lower strata. In other words, it is incorrect to regard the cream as a unit when we are considering its bacterial content. It was frequently evident from a glance at the Petri plates that the uppermost two ounces of the bottle contained decidedly more bacteria per cubic centimeter than the succeeding two ounces, and these, in turn, more than the lowest portion of the cream or milk (Table 1). This

TABLE 1.—BACTERIA PER C.C. IN LAYERS OF BOTTLED MILK.

1st 2oz.	2nd 2oz.	Remainder.
93,500	49,000	
86,500	14,000	
235,000	96,000	40,000
115,000	36,000	6,000
102,000	57,000	
1,383,000		160,000

was true even when the milk was simply poured from the bottle. Tubercle bacilli also were shown to be carried to the surface, for the animals inoculated with the upper two ounces of cream developed tuberculosis oftener than those inoculated with the lower ounces. As typhoid fever of late has been frequently traced to the milk supply, I took the opportunity recently of inoculating with typhoid bacilli two bottles of a certified milk, which at times is almost sterile, and, after allowing them to stand over night, made bacterial counts from the various layers. As was to be expected the result was the same; the greatest number of typhoid bacilli were found in the upper two ounces of the cream (Table 2). This result preaches its own remedy.

TABLE 2.—TYPHOID BACTERIA PER C.C. IN INOCULATED BOTTLED MILK

1st 2oz.	2nd 2oz.	Remainder.
320,000	103,000	43,000
1,200,000	395,000	155,000

In the paper to which I have referred I suggested a way of taking advantage of this physical principle and adapting it to the practices of infant-feeding. This new modification of preparing milk was not complex and did not clash with the accepted method of estimating top-milk mixtures, for, after discarding the upper two ounces of cream, it was ascertained by quantitative analyses how many ounces should be removed to obtain 12 per cent., 10 per cent., or 7 per cent. cream; in other words, the different strengths of cream which are used as a basis for preparing top-milk mixtures.

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* Read in the Section on Diseases of Children of the American Medical Association, at the Sixtieth Annual Session, held at Atlantic City, June, 1909.

1. The Distribution of Bacteria in Bottled Milk, and its application to Infant Feeding. Arch. Pediat., August, 1908.

Nevertheless, in spite of its basis of scientific fact and apparent practicability, this partially skimmed milk which I now term "middle milk" has, so far as I am aware, found no acceptance. In the recent literature are found references to the usual top-milk mixtures as frequently as before, some writers urging the use of the upper two or four ounces of the gravity cream for milk mixtures, or even the use of the uppermost cream from two or more bottles. No argument against the theoretical or practical soundness of my suggestion has come to my notice. As I have found this modification of top-milk feeding practicable in a clinical experience extending now over a year, I thought it excusable to point out in a few words that middle milk is not merely an interesting laboratory suggestion, but that it permits of a simple and practical modification of top milk feeding, and one which possesses decided advantages.[2]

I have used the middle-milk mixtures mainly in the dispensary, prescribing them to women who are certainly not endowed with more than average intelligence. These mothers were given the following directions: Remove the upper two ounces of cream and keep it for table use. Then dip off the next eight ounces of milk. (This furnishes them with a standard 10 per cent. cream.) They are then directed to dilute a certain number of ounces of this cream with water or barley water according to the age or condition of the infant. If a 12 per cent. cream is preferred as a basis, 7 instead of 8 ounces of middle milk, is ordered removed; if a 7 per cent. cream is desired, 12 ounces are removed. It is certainly a very simple matter to carry out these directions. The only possible disadvantage is that there are fewer ounces of cream as a basis than in top-milk mixtures; for example, whereas we are able to obtain 16 ounces of 7 per cent. top milk from the bottle, we can have only 12 ounces of middle milk. The mothers understood the directions readily, quite as readily as they did the formulas based on top milk which I had been in the habit of prescribing.

We are all aiming at supplying better milk for the infants of the poor, and are striving to make it possible to obtain, especially during the warm weather, a cheap milk with a low bacterial count. Here, then, is a supplementary method by which the count may be materially reduced without in any way affecting the natural properties of the milk.

We can not hope to obtain clean "middle milk" from dirty whole milk, but it is certainly true that the more contaminated the milk the more is to be gained by removing the upper two ounces. And, on the contrary, the better the milk, that is to say the more nearly it approaches the standard of certified milk, the less is to be accomplished by this process. At present there can be no question but that comparatively little of the milk fed to the infants of the large cities approaches this latter standard. If the milk is contaminated by pathogenic bacteria, for instance, by tubercle or typhoid bacilli, the dose of these bacteria fed in the "middle milk" will be much less than that in the top milk.

I realize that many here have made use of middle milk, although they have not used middle-milk mixtures, that they have, for perhaps years, prescribed the removal of the upper ounces of the cream in order to reduce the fat content of the milk. In this way they have unconsciously killed two birds with one stone, and the fact that the modification which I suggest chimes well with the teaching against high fats should argue strongly in its favor. Especially is this so as regards feeding in warm weather, when bacterial and fat intoxications woefully combine to increase the infant mortality.

I do not urge this modification as a method of purifying dirty milk, as a substitute for pasteurization or sterilization, but wish merely to call the attention of those who prescribe cream dilutions to the fact that "middle milk," that is bottled milk deprived of its upper two ounces, not only contains fewer bacteria than top milk, but has been found of practical value in the feeding of infants.

154 West Seventy-second Street.

2. Since this article was written, a review of this subject by Dr. John F. Anderson, entitled "The Relative Proportion of Bacteria in Top Milk and Bottom Milk and its Bearing on Infant-Feeding" has appeared in the Journal of Infectious Diseases. I was pleased to find after the lapse of a year a complete confirmation of my laboratory experiments, as these investigations are the structure on which I base the desirability of using middle milk. Dr. Anderson also believes that question is of importance in infant feeding and concludes that "the preponderance of bacteria in top milk may explain why infants sometimes do not thrive on milk made from top milk."

ABSTRACT OF DISCUSSION

DR. FRANK S. CHURCHILL, Chicago: I take it that the point in feeding babies is first of all to feed them clean milk and then to feed them percentages that are adapted to the child. These two objects can be better attained through the milk laboratory. It is true that the milk laboratory is an expensive thing, but in all the larger cities we have charitable milk laboratories where such milk can be obtained at a very small cost and in case of need it can be obtained free. We can send the prescription to the laboratory and give directions as to the exact amount to be fed to the child. The laboratory at Chicago is inspected and subjected to bacteriologic investigation and we feel that we can depend on the milk from this laboratory.

DR. L. T. ROYSTER, Norfolk, Va.: The feeding of babies, especially babies of the poor, resolves itself into getting clean milk. In Norfolk we have greatly lowered the mortality by getting clean milk. If we can get a certified milk from a laboratory we are doing a wise thing. We can also give to the poor prepared milk with great benefit, but with an intelligent mother handling milk that is delivered cool from the dairy and kept clean at home we may also get excellent results. In reducing the bacteria to the minimum Dr. Hess's method is a very good one.

DR. FRANK W. PINNEO, Newark, N. J.: Clean milk would obviate the necessity for discarding any part of it. The investigations of Dr. Hess are interesting and commendable, but as we can not remove all the bacteria with the upper two ounces of cream why not strive for a still better product—initially clean milk. In Essex County, N. J.—the cradle of certified milk—we have such a product, and where you can have milk that is so nearly free from bacteria (even in the upper two ounces) it will not be necessary to employ the method of Dr. Hess.

DR. J. J. THOMAS, Cleveland: Does Dr. Hess consider the germs themselves as a cause of the summer diarrheas? If so, the removal of the germs by this method would answer the purpose, but, according to recent investigations by Czerny, the summer diarrheas are caused by the acids produced by bacteria acting on the fat or sugar. In that case the harm has already been done and the removal of the upper layer of cream will have no effect at all. It is time for us to wake up to the point of proving or disproving that the condition is due to the germs. The thing of greatest importance is to keep out the germs, but it is a question in many cases of doing the best we can with poor milk. It seems to me that when the laboratory milk is of doubtful quality and we have certified milk, it is better to discard the laboratory milk and to depend on the certified milk. Owing to the pressure brought to bear in Cleveland, certified milk is now being used in modifications, but Cleveland is only one of the two cities in the country where this is done.

DR. ALFRED F. HESS, New York: No doubt it would be better if all the children and infants of the poor could get their milk from laboratories, but I know that in New York

most of the babies treated in the dispensary do not get their milk from the laboratory, but are given loose milk, or bottle milk. If we could induce these people to get it from the philanthropic institutions it would be better, but they do not get it there and so we must deal with conditions as we find them. These counts were made from ordinary 8 cent bottle milk, the ordinary cheap milk. I ordered analyses to be made so that I would know just how much to use in order to get a 7 per cent., 10 per cent., and 12 per cent. cream. I do not think Dr. Pinneo quotes the German authors quite correctly in the statement that all the trouble is due to the fat. I believe they admit that there is also some trouble due to the bacteria. There is no reason why this middle milk should not be pasteurized afterward, one will have fewer dead bacteria. Whether the bacteria do harm or whether only the chemical qualities do harm, we know that tubercle bacilli do harm and that the typhoid bacilli do harm and these two germs are found largely in the upper milk, and if we could avoid these we could avoid many cases of illness.

THE ETIOLOGY AND TREATMENT OF THE SO-CALLED SUMMER DIARRHEA IN INFANTS *

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Six or seven years ago there were carried out under the supervision of the Rockefeller Institute extensive bacteriologic examinations of the stools of infants suffering from summer diarrhea, with especial regard to the presence of the *B. dysentericus*.[1] Not only the Rockefeller Institute, but many hospitals and laboratories undertook at the same time the same careful research. The results of these researches seemed at first to throw some light on the etiology of this affection. Not only was the *B. dysentericus* (usually of the Flexner type) found frequently, but in some of the cases agglutinins were found in the blood. Soon after these researches in the east, Weaver[2] published a series of examinations by which he was able to show that the dysentery bacillus was to be found in the stools of infants suffering with summer diarrhea in only 25 per cent. of the cases. About the same time Dr. J. S. Welch and myself[3] examined the stools of 17 children with diarrhea in Cook County Hospital, with the result that only one case showed the Flexner bacillus; but we were able to isolate other bacilli, which with the variations from the Shiga-Flexner type recorded by other observers served as links in a chain connecting the *B. coli communis* to the *B. dysentericus*. We came to the conclusion that true dysentery, if such existed in infants, was a relatively rare disease in Chicago.

There are many reasons for believing that *B. dysentericus* is not etiologically connected with a large percentage of the diarrheas in infants. In the first place, the cases which showed the dysentery bacillus in the stools differed clinically in no way from those cases in which no dysentery bacilli were found. In the second place, the dysentery bacilli were usually few in number and extremely hard to find. In the third place, agglutinins were by no means constantly present and, so far as could be ascertained, the antidysenteric serum which has excellent results in the true dysentery in the adult, as found, for instance, in Japan, seemed to have no effect whatever on the condition of the infants affected. The dysentery bacillus has never been cultivated from the blood of these infants nor has it ever been found outside the human body (except in the laboratory animals).

I think it is safe to say that unless more certain proof is brought that the *B. dysentericus* is etiologically connected with summer diarrhea we may regard it as at least an open question with the burden of proof resting with those who support the theory, for such it is.

Escherich[4] and very recently Jehle[5] have described a streptococcus enteritis with a definite clinical history and the presence of such complications as nephritis, peritonitis, etc. Jehle regards a given case of diarrhea as due to the streptococcus when that organism is found in great numbers in the stools at the very onset of the attack. Evidently the condition is a streptococcemia with the intestinal canal as its point of entrance.

Escherich[6] has described a so-called epidemic of gastroenteritis occurring in a home for nurslings in which the *B. acidophilus* was found in the stools, and Finkelstein[7] one in which the *Bacillus enteritidis* was found. That there was any connection etiologically between the *B. acidophilus* and the diarrhea was not definitely proved. Cooley,[8] of Detroit, has recently described an epidemic in which the *B. pyocyaneus* was found in the stools.

Many years ago Escherich[9] advanced the theory that the *B. coli communis* suddenly became more virulent and either affected the gastrointestinal canal itself or produced toxins which caused the disturbance. Vaughan[10] is the only one who has been able to produce a toxin from the colon bacillus, and his conditions varied so greatly from those which we encounter in the infant that it is fair to assume that no such toxins are formed by the colon bacillus in the intestinal tract of the infant.

If we stop to consider the clinical picture which the ordinary summer diarrhea presents, we will see that there are present many things which are not compatible with the theory that this is due to infection of the intestinal wall. Usually, although the onset apparently is very sudden, still if we inquire more closely we will find that there have been present for days, weeks and even months, symptoms which point more or less directly to derangement of the gastrointestinal functions and the normal metabolism of the child. Why should we resort to infection to explain a condition which is more easily explained by a graver dietetic error of the same sort or a continuation of the same error past the point of tolerance? But the onset is not so significant as the course. If we take all food from a child having an acute attack of summer diarrhea and give in its place only water, perhaps sweetened with saccharin (not sugar), and containing a little barley or tea, in from 24 to 48 hours the temperature returns to normal, or almost normal, and the child's general condition becomes very much better, so much better, in fact, that the mother frequently regards it as well. To me it is not conceivable that the infection of such a long tube as the intestinal canal could be so readily and easily removed.

At present it seems to me that the infectious nature of summer diarrhea has not been proved; in fact, quite the contrary, and that we must look elsewhere for a satisfactory explanation of conditions as we find them.

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* Read before the Douglas Park Branch of the Chicago Medical Society, May 3, 1909.

1. Rep. of Rockefeller Inst., I, 1903.
2. Jour. Inf. Dis., 1905, ii, 70-96.
3. Am. Med., 1905, ix, 942-945.
4. Wien. klin. Wchnschr., 1897, x, 917-920; Jahrb. f. Kinderh., 1899, xlix, 137.
5. Jahrb. f. Kinderh., 1907, lxv, 40.
6. Jahrb. f. Kinderh., 1900, lii, 1.
7. Deutsch. med. Wchnschr, 1896, xxii, 608, 627.
8. THE JOURNAL A. M. A., Feb. 22, 1908, 607.
9. Verhandl. des 17 Congresses für innere Medicin, 1899, 425.
10. Ztschr. f. Physiol. u. Chem., 1886, x, 146.

Within the past year Finkelstein[11] has described a disorder of nutrition which he designates "metabolic intoxication." The symptoms of this affection are the same as those of summer diarrhea as we commonly encounter it. Finkelstein has proved that this entity is an intoxication metabolic in nature caused primarily by the inability of the organism to assimilate the sugar properly, a condition to which too much fat in the food predisposes. He has proved that after a hunger diet the pure casein of cow's milk can be taken care of, and that sugar as well as fat in any appreciable quantities causes return of the symptoms. His argument in favor of this being due to the food is that on removal of food the symptoms of intoxication quickly disappear. In this condition we find a leucocytosis and albumin, sugar (lactose) and casts in the urine. The breathing is deep and rapid. Meyer,[12] who has worked on the metabolism of metabolic intoxication, believes it to be an acidosis. He thinks that the loss of weight for which the diarrhea does not give us sufficient explanation is due to the escape of moisture from the lungs.

Czerny and Keller,[13] while agreeing with Finkelstein to a degree, suggest that we may have a "toxicosis" due to the decomposition of the food by bacteria, either before ingestion or in the gastrointestinal canal. Although offering no proofs, they are inclined to the opinion that the toxic products are acids split off from the sugar or the fat. Like Finkelstein, in no case have they seen any reason to believe that the casein of cow's milk caused any disturbance in these cases. Czerny and Keller state positively that they do not think that there is such a thing as infection of the gastrointestinal wall, except in the various diseases of the new-born, hemorrhagic diseases, sclerema, etc.

If we are to accept the ideas of Finkelstein or of Czerny and Keller, or both, we must answer several questions. The first one of these is: Can we explain all the clinical findings by these theories? The only symptoms about which there would likely be much question are fever and the urinary findings. That fever is not always due to bacteria and their toxins is proved by its presence in such conditions as uremia, a condition marked by a profound disturbance of metabolism.[14] The presence of sugar in the urine indicates at least a disturbance of absorption and probably also of metabolism. As to the presence of albumin and casts, recently we have found them so frequently and in such a variety of diseases that their presence has lost much of its former significance. In nearly any severe disturbance we would not be surprised to find them, and hence any disturbance of metabolism so severe as to allow lactose to pass into the urine would certainly give rise to substances sufficiently irritating to the kidney to account for the presence of albumin and casts in the urine.

The second question is: Can we account for the pathologic findings on these theories? We can divide the pathology into the lesions of the intestinal wall and the lesions of the other organs. The lesion usually encountered in the intestinal wall is congestion; this may be followed by round-cell infiltration and even by ulceration with infection of the lymphatic tissue. The presence of toxins, whether metabolic or alimentary in origin, would be sufficient to cause a congestion, and if more irritating an infiltration. We have so long been accustomed to regard bacteria as the cause of intestinal ulceration that we have forgotten that when we speak of bacteria acting in this way we mean their toxins. That chemical poisons produced in the body, whether by disturbance of metabolism and excretion through the intestinal wall or by the decomposition of the food, can cause ulcer formation in the intestine, would seem more than probable. Any involvement of the lymphatic tissue must be regarded as due to secondary bacterial invasion. The finding of bacteria in the epithelial cells of the intestinal tract is of little significance, since even a half-hour after death they are often found in cases in which no pathologic condition of the intestine is evident. That they should be found in the epithelial cells of the feces is not to be wondered at, for these in most cases have become detached much earlier than one-half hour previous to defecation.

The only organ outside the intestinal tract involved in most cases is the liver. One of the chief functions of the liver is to arrest poisons on their way to the general circulation. In a condition such as this, in which poisons are present in large amounts, we would expect to find the liver swollen and showing some degeneration of the cells. This, in fact, is the condition in which we find this organ. But some one may ask if this condition is metabolic in nature why does it occur more frequently in summer? To answer this question we must take into consideration three facts: first, in proportion to its weight the skin surface of the infant is much greater than that of the adult; second, a small baby is usually much too warmly clothed, and third, in the hot weather less food is required than in colder months. The first fact shows that the child is more susceptible to heat because of a relatively greater body surface. In addition, the warm clothing prevents the proper excretion through the skin. A mother practically never thinks that a child should have less food during hot weather, and hence the child is kept on the same high diet. The result is that a disturbance of metabolism occurs because of excessive food supply and defective excretion through the skin. On the other hand, if we agree with Czerny and Keller, the whole can be explained by a decomposition of the milk, a thing which is certainly most apt to occur in the summer months.

When, therefore, we stop to consider the question of the etiology of summer diarrhea, we come to the conclusion that, though infection of the intestinal wall probably takes place in some cases, it is not the usual cause of a summer diarrhea in infants, but that this affection is, as a rule, due to a disturbance of metabolism or decomposition of the food.

Having arrived at this conclusion, we can now intelligently turn to the treatment. If we are dealing with a condition which directly or indirectly is due to the food ingested, the first indication is to stop all food. But this is not sufficient. Meyer has shown that in the acute attack the loss of weight, which at times is relatively very great, is due to the loss of fluid in the form of watery solution of the body salts. This takes place primarily from the intestine in the form of diarrhea, but the amount lost in this way will not account for the total loss. Meyer suggests that in all probability the loss takes place in large part through the lungs and that this excretion is evidenced through the rapid deep breathing. Be this as it may, the indication is present for the sup-

11. Jahrb. f. Kinderh., 1907, lxv, 1, 263; lxvi, 1, 521.
12. Jahrb. f. Kinderh., 1907, lxv, 585.
13. Des Kindes Ernährung, Ernährungsstörungen und Ernährungstherapie. Leipzig. u. Weln., 1909, ii, 134.
14. Since this paper was written Rosenstern has published some interesting experiments in which he shows that giving even a 1 per cent. sodium chlorid solution to a child suffering from a nutritional disturbance will not only raise the temperature but cause a leucocytosis. Monatschr. f. Kinderh., 1909, viii, 9-23.

ply of fluid to the system. This we accomplish by giving barley water or weak tea. However, it is occasionally impossible to give these fluids by mouth because of the comatose condition or extreme asthenia of the patient, and, since it is imperative that fluid be given to these babies, at times it is well to resort to a continuous enema, or even to subcutaneous administration of normal salt solution.

The starvation diet is continued for from 24 to 48 hours. At the end of this time all symptoms have usually disappeared; even if they have not, nothing can be accomplished by a continuance of this treatment, and food in some form should be administered. For the past two years, I have used skimmed milk as the first food to be given these children and have never had cause to regret my action. I have usually brought this to a boil before giving it, because in this condition it seems to be more readily digested. This kills any bacteria which might act on the milk sugar and which are present in skimmed milk in large quantities. The skimmed milk is given to the amount of from 1¼ to 1½ ounces to the pound weight of the child in 24 hours, and diluted so as to afford enough in quantity to each feeding. The food is sweetened with saccharin when necessary and given at four-hour intervals. This, of course, is a temporary measure and as rapidly as possible milk sugar should be added and the skimmed milk replaced with whole milk. In this no rule can guide us except the condition of the child, and hence the gradual resumption of sufficient food must depend on the judgment of the physician. As a rule, we must be very cautious or there will be a return of the affection. In this method of treating this intoxication one of the most annoying features is the tendency to constipation when the skimmed milk is being replaced with whole milk. At this time the addition of malt to the food frequently brings relief.

Some symptoms may prove troublesome. The vomiting often ceases after the starvation period, especially if a four-hour interval is strictly observed. Sometimes it is necessary to take more active measures, such as stomach washing. The use of such medicaments as bismuth, it seems to me, is limited to such cases as do not respond to the other forms of treatment, and they are not common. The diarrhea will nearly always take care of itself. I sometimes employ colonic flushings, but more with the idea of reducing the temperature than of cleaning out the bowel. The reduction of the temperature can be accomplished usually by the measures previously suggested, but hydrotherapy is often of great advantage and when delirium is present antipyrin acts very favorably, not only in controlling the delirium, but also in reducing the temperature. Another distressing feature is distention. This is present usually only in the more protracted cases and is due to a circulatory disturbance of the intestine whose exact mode of action we do not know. For the temporary relief of this condition the introduction of a tube into the rectum, the other end of which is placed in a vessel containing warm water, frequently brings relief. We may also use colonic flushings and hot external applications to the abdomen even in the form of turpentine stupes. Collapse can best be combated by mustard packs followed by saline infusion or continuous saline enema.

I have purposely made no mention of the use of calomel or intestinal antiseptics. I have always felt that if we can obtain results in these infants without the use of drugs it is well to do so, and the treatment outlined will do what we desire. I feel that the use of calomel has been very much abused. It is conceivable that by further irritating an already irritated bowel it may do distinct harm and its qualities as an intestinal antiseptic are minimum. As to intestinal antiseptics in general, I can not see that their use is in any way indicated.

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Clinical Notes

CALCIUM SALTS IN THE TREATMENT OF EPILEPSY

WITH REPORT OF THE FIRST CASE

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DETROIT

With a large experience in the study and treatment of epilepsy, such as was afforded by my seven years' sojourn in the laboratory and wards of the Ohio Hospital for Epileptics, it is natural that I should be most conservative in expressing an opinion in favor of a new method of treating this malady. More particularly should I be reluctant about mentioning the seemingly favorable results that accrued with but a small number of cases. It was considerations of this nature that restrained me from putting on record the really extraordinary success that followed my first trial of the remedial effect of a calcium salt in epilepsy, and my avowed policy of postponement for further and more extensive corroboration of that success would not now be broken except for the appearance of an article from a physician in asylum practice,[1] who reports what he believes to be the first instance in which calcium lactate has been used for treating epilepsy. Alike to supplement the favorable record published by Dr. Littlejohn, who shows by tabular exhibits the suppression in two patients of epileptic attacks on the administration of calcium lactate over a period of three or four months, and to claim such credit as may be due from the standpoint of originality and historic priority, I herewith present a narrative of the first case of epilepsy in which I employed a calcium salt, together with the events and experiments which led me to the trial of this particular medication.

HISTORY OF CASE

Patient.—W. T. H., was brought to me for treatment in April, 1906, when he was 4 years and 4 months old.

Family History.—The child's parents were living and in good health; an older brother and a younger sister were free from neurotic disease. There was no record of epilepsy in the family, which, on the mother's side, was prominent in social and financial circles. The father was a well-educated, retired physician.

Personal History.—As an infant the patient was remarkable for his uneventful progress and perfect physical and mental development, which was the particular pride of a well-known pediatrist who supervised this period. A month after his third birthday the first manifestation of nervous disorder was noticed, and after a series of consultations between several general physicians and specialists a diagnosis of *petit mal* was reached and treatment with sodium bromid instituted. Occasional *petit mal* followed, and eight months after the first attack the primary severe *grand mal* occurred.

Frequency of Attacks.—By January, 1906, the epileptic seizures had become fully established, and the nurse, who gave unremitting care to the child, recorded the number and classified them as "light," "hard," and "convulsions," by which were meant *petit mal* (momentary loss of consciousness with-

1. Littlejohn, A. R.: Calcium Lactate in the Treatment of Epilepsy, The Lancet, May 15, 1909, p. 1382.

out fall), *petit mal* (with fall but no marked convulsions), and *grand mal* with all the events of a particularly severe major epileptic attack. In January there was a total of 844 attacks—401 "light," 424 "hard," and 19 "convulsions." For the following months to the time I finally had withdrawn the bromid by gradual reduction the total monthly number of attacks varied from 530 to 1,012, the ratio of the three varieties being about as above indicated. Following the withdrawal of the bromid the usual change from numerous light to fewer severe attacks took place as shown by a monthly total of 35 to 118, and of these *grand mal* seizures numbered 34 to 73 a month. June 3, 1907, the treatment under special consideration was begun, and the record shows 18 attacks, all *grand mal*, for this month, none for July, 72 *grand mal* in August, 6 in September, and from Sept. 7, 1907, to the present writing, June 30, 1909, no further epileptic attacks.

Mental Condition.—The normal mental growth at the outset of the epilepsy ceased abruptly, and retrogression began which, when I first saw the patient, had reached the stage of a low-grade epileptic imbecility. After the bromid was stopped the hoped-for mental improvement did not follow, and it was not until after all attacks had ceased with the inauguration of the new treatment that a gradual clearing of the mind was observed, and this unclouding is still going forward to a degre most striking after the apparently hopeless state that once existed. In fact, the child seems to have suffered a mental non-existence for the two years and eight months of the epilepsy, and, with the suppression of the neurosis, to have resumed his mental growth from the time when the attacks began.

Previous Treatment.—The child was placed in the hands of good physicians, to whose aid was brought the advice of several noted specialists from two of our largest metropolitan centers. Aside from such general dietetic and hygienic precautions as are usually advised, bromids were employed, and with the increasing number of seizures, pushed in dosage. An operation on the cranium based on the theory of localized pressure was at one time considered but not undertaken.

Personal Treatment.—When I assumed charge of the case my announced plan was to attempt the withdrawal of bromids and to correct any possible source of reflex irritation. In the course of an examination of the digestive apparatus by a well-known gastroenterologist subnitrate of bismuth was administered preliminary to a skiagraph, and with an apparent reduction in the number of attacks following it, this drug was employed for some months without benefit. Finding that no special attention had been paid to the eyes, I advised the services of an expert refractionist, who found evidence of refractive anomaly and instituted treatment first by atropin-relaxation of the accommodation for a period, after which the compound hyperopic astigmatism was corrected. It was at the same time that the reduction of bromid had reached the end, and the resulting change from very numerous *petit mal* to a lessened total, but an increased number of *grand mal* followed. Some of the *grand mal* now came in series, never, however, reaching a full *status epilepticus*. I was with the patient during one of these series and witnessed *grand mal* as severe as any that had ever come under my notice in a large institutional experience.

Special Treatment.—Such was the condition of the patient when he came to Detroit for another of the several periods to allow of my personal observation. During March, April and May the lad had frequent nose-bleed following the *grand mal* cycles, and the nurse claimed she could detect the odor of blood on the breath during a convulsion and prior to the onset of the visible hemorrhage. I was at this time actively engaged in the practice of therapeutic immunization where the problem of blood coagulability presented itself, and I had employed Wright's method of measuring the time of blood coagulation, as well as his plan of using calcium salts to fortify a defective coagulability. Accordingly, when my attention was arrested by the reports about the epistaxis, I made the first blood-clotting test June 2, 1907, finding that the patient's blood failed to clot in 4 minutes, while a control blood under the same conditions firmly coagulated in 1½ minutes. The following day I began the administration of calcium lactate in doses of 7 to 10 grains dissolved in hot water and added to milk, three times a day. This medication has been continued with no change except occasionally reducing to one or two doses daily, to the present time. There has been no evidence of a harmful effect from the drug during this prolonged administration. Under its influence the blood-clotting time reached 2½ minutes by June 19, 1¾ minutes by July 6, and on numerous tests since, I have not found it to exceed 2 minutes, though rarely attaining the normal minimum of 1½ minutes. Since the cessation of the epilepsy three months after commencing the calcium lactate the child had occasional nasal hemorrhages, apparently related to periods of lowered coagulability not entirely brought to normal by the calcium salt. No lesion or abnormality has been found in the nose to explain the epistaxis.

RATIONALE OF TREATMENT

It was solely on the indication afforded by the hemorrhagic tendency in my first patient that I was led, after verifying by laboratory tests a tardy blood coagulability, to use the calcium salts in epilepsy, with the happy result just described. At the time I administered it MacCallum's observations on calcium metabolism as related to parathyroid intoxication and to tetany had not been published, nor had Carle's paper appeared on calcium chlorid in therapeutics,[2] with its recommendation for the use of the drug to allay nervous irritability in tetany, laryngismus stridulus, and "convulsions."

Incomplete observations on several additional cases of epilepsy treated with calcium lactate tend to confirm the favorable results obtained with my first case, and now that Littlejohn[1] has recorded the beneficial outcome in his early tests I shall be encouraged to prosecute further therapeutic experiments, for which I hope to have the opportunity through the courtesy of the authorities of the Ohio Hospital for Epileptics.

DERMATITIS FROM HAIR DYE

ANOTHER CASE OF POISONING FROM MRS. POTTER'S WALNUT JUICE HAIR STAIN

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History.—On June 23, 1909, I was called to see a woman who gave a history of having an eruption on the face which first appeared four weeks previously, subsided somewhat in two weeks and then recurred. The burning and itching were so intense that the patient could not sleep and nothing prescribed by the two physicians who had her in charge gave her any relief.

Examination.—Her face, neck and part of her shoulders were red and swollen and the area involved covered by numerous minute vesicles all in the same stage of development. While observing the patient I noticed that she had a habit of placing the palms of both hands on her hair and then pulling them down over her face. This suggested the possibility of the irritant being a hair-lotion or dye. Questioning her along this line, I elicited the information that she had been using "Mrs. Potter's Walnut Juice Hair Stain," having made two applications—the first one shortly before the first appearance of the eruption, and the second application two weeks later, as it was not suspected that the hair stain had anything to do with the eruption.

Diagnosis.—This history convinced me that the trouble was a dermatitis due to the use of the hair stain, as I had read the reports of the other cases published in THE JOURNAL.[1]

Treatment.—I advised her to keep her hands off her hair and prescribed the liquor alumini acetatis, N.F., diluted one to three with water, applied on compresses, which gave her immediate relief. The itching stopped and the swelling subsided so that three days later her face appeared normal except for a slight desquamation.

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2. Jour. de Méd. de Bordeaux, 1907, xxxvii, 472.
3. This makes the fifth case recorded in THE JOURNAL. The other cases appeared in the issues of Feb. 13, 1909; March 6, 1909, and two in the issue of April 3, 1909.

As this stain evidently has a large sale, as it is extensively advertised in the magazines and daily papers, cases of dermatitis from its use must be more frequent than the cases reported show. One fact that is liable to mislead the physician is that on account of the scalp being less sensitive to irritants than the skin of the face the scalp is not involved and the connection between an eruption on the face and the application of a dye to the hair is overlooked. The use of hair dyes and face lotions is becoming so common that we must consider them as possible causative factors in any eruption about the face, neck and scalp that we can not class as one of the recognized diseases.

632 Fulton Building.

AN EPIDEMIC OF EMPYEMA

E. H. MUSSON, M.D.
NORBORNE, MO.

The following experience seems sufficiently remarkable to be worth reporting. The cases mentioned all occurred in my practice during the six months from Dec. 1, 1908, to June 1, 1909, in a rural community having a radius of less than four miles, with the center about seven miles northwest of Norborne, Mo.

I attended in this community six cases of frank lobar pneumonia and eight cases which I diagnosed pleuropneumonia. These latter failed to show clear physical signs of consolidation, the clinical picture being that of a severe pleuritis. All but one, an infant, however, raised a small amount of slightly "rusty" sputum. One of the pneumonia patients and six of the pleuropneumonia patients developed empyema as a sequel. Another pleuropneumonia patient had a large serous effusion, making eight cases of effusion out of the fourteen, seven being purulent and one non-purulent.

The treatment of most of the cases preceding effusion was simple, consisting of good nursing, elimination, very hot applications to the chest for pain, with morphin given in a few instances, and tepid bathing for combating a dangerously high temperature.

The empyema patients ranged from 14 months to 72 years of age. Five were males and two females. In four cases the pus was in the right pleural cavity and in three in the left. I operated twice by incision in an intercostal space and five times by resection of a rib, and all recovered. The gross appearance of the pus was that of a pneumococcus infection. In the case of non-purulent effusion the patient recovered satisfactorily after the withdrawal of nearly a half-gallon of fluid from the pleural cavity.

THE ASSOCIATION OF ENTEROCOLITIS WITH PNEUMONIA

MARK LIEBERT, M.D.
BROOKLYN

The prevailing epidemic of enterocolitis and pneumonia running typical courses side by side will, no doubt, arouse the interest of many practitioners. The field for bacteriologic study should yield much useful information. The two diseases apparently aggravate each other, but the course of either is not otherwise modified. They appear either to arise simultaneously or closely to follow each other. The diarrhea follows the operation of the usual causes, most often occurring in bottle-fed infants or children fed on malted milk, though I have seen a case in an exclusively breast-fed infant.

The simultaneous involvement of the respiratory and gastrointestinal tracts would suggest the presence of a common predisposing cause. In a few cases there was a history of a preceding prolonged bronchitis. The stools are small in amount and occur at great frequency. At first they are greenish, mucoid and very fetid; later they become serous in character. They may be yellowish, showing particles of curdled undigested milk. In one of my cases the stools were blood-streaked. If diarrhea exists before consolidation has taken place in the lungs, there is usually a temperature between 101 F. and 102 F. With consolidation the temperature may be very high, reaching 105.5 F. Prostration is marked. In one of my cases cough was entirely absent, while the lungs gave typical physical signs. These cases usually occur in the second year, although I had one case in a boy of six.

Treatment should be directed chiefly to the diarrhea. In this I follow the teachings of Dr. Joseph E. Winters, of New York. Castor oil at the outset, starvation for from 24 to 36 hours, with plenty of cold water during this period. I have seen fever go down precipitately under this treatment alone. Even drugs are to be excluded. At the end of from 24 to 36 hours feeding is begun according to age. For children less than 10 months old, cow's milk is modified so as to minimize proteids; above 10 months cereals are given and milk avoided. I do not think that the exclusion of milk tends to aggravate the course of the pneumonia. The fever is treated by tepid sponging and the ice-bag to the head. High rectal enemas, as shown by Dr. Winters, may increase the cyanosis and tend to produce collapse.

This is written in the hope that it may interest others whose experience has been extensive in this class of cases. It is a live, timely topic and much may be said that will prove beneficial to all in the treatment of two dangerous affections.

57 Christopher Avenue.

PIN EXTRACTED FROM TRANSVERSE COLON

FRED V. WATSON, M.D.
ANTIGO, WIS.

The cases reported in THE JOURNAL, one (April 10, 1909) of a darning needle, extracted from epigastrium of an infant, the other (June 5, 1909) of a scarf pin swallowed by an infant and found protruding from the anus, have prompted me to report a case that occurred in my practice last week.

History.—A young woman, aged 18, with an acute attack of appendicitis second day complained of a sharp sticking pain over the line dividing the right hypochondriac region from the epigastric region. As there was extreme tenderness over McBurney's point with tympanites, colicky pain and vomiting, pulse 120, temperature 102 F., nothing was thought of this pain, but a diagnosis of acute catarrhal appendicitis was made and immediate operation advised.

Operation.—Under ether anesthesia I made my incision directly over McBurney's point, and on searching for the appendix I picked up a part of the transverse colon that contained a pin. This was extracted and the wound closed with a puckering string of Pagenstecher's linen. The appendix was then located and found to be in an acute catarrhal condition, curled on itself, with adhesions from a former attack. It was removed in the usual manner and the patient made a good recovery. The patient has no knowledge of swallowing the pin.

Therapeutics

TAPEWORM

While the eradication of this unwelcome parasite sounds simple enough when the treatment of the condition is read in a text-book, such treatment, and any treatment, is often not successful in obtaining the head of the animal, which is the main object at which the treatment aims. Administration of the oleoresin of male fern is the treatment most generally used, and perhaps has been the one most frequently successful.

Dr. Seymour Spier, of New Haven, Conn., has had almost constant success with pomegranate. An unpublished letter from this physician thus describes his exact method of procedure: He first prepares a decoction from 60 grams of fresh pomegranate bark to 500 c.c. of water, slowly boiling this down to 250 c.c. (2 ounces of the bark to a pint of water, boiled down to half a pint). On the day before the administration of the anthelmintic the patient is given a cathartic, a good dose of compound licorice powder or other efficient purgative, in the morning. He is allowed breakfast and noon meal as usual. The supper, or evening meal, should consist of bread, or crackers, in milk. Before retiring he is given a soap suds enema, and at 6 a. m. the next morning, the morning of treatment, he is given half, viz., 125 c.c. (4 ounces) of the half-pint of the prepared pomegranate decoction. Half an hour later he is given a tablespoonful of castor oil, and in another half hour the patient takes the remainder (125 c.c., or 4 ounces) of the decoction. In thirty minutes this is followed by two tablespoonfuls of castor oil. The oil may be given in lemon juice on cracked ice, or on black coffee. If the oil is positively objectionable, instead of it, forty-five minutes after the administration of the last dose of pomegranate decoction he may be given a dose of salts, or even a bottle of the pleasant tasting effervescing citrate of magnesium. In a few hours the patient almost invariably passes the worm, as a whole with head attached, without any prolonged griping or very frequent movements. The patient is then immediately ready for his breakfast or luncheon.

If previous examination of the segments of the worm has shown it to be of the pork variety (*Tænia solium*), Spier adds one drop of croton oil to the last portion of the decoction.

As the above decoction is bitter, and sometimes nauseating to the patient, and as a concentrated preparation of the alkaloids of the pomegranate is made especially for the treatment of tapeworm, and can be obtained, it may be ordered. It is much pleasanter to take and as effective as the crude drug. In fact, Spier says he has found it difficult to obtain fresh, active pomegranate bark, and to be successful the drug must be active.

The only disagreeable symptoms that occur from the administration of pomegranate in the above dosage is that there may be dizziness, and sometimes a partial amblyopia, which lasts from five to fifteen minutes. This is never serious, soon passes off, and is generally dispelled by a dose of whiskey or brandy.

Pomegranate (Granatum, U. S. P.) occurs as a bark which contains, besides about 25 per cent. tannic acid, several alkaloids, the most important of which are pelletierin and isopelletierin (sometimes called isopunicin). These alkaloids have some action similar to atropin, hence probably the effect on the eyes. If toxic doses be administered, or if large doses remain long in the gastrointestinal canal without being pushed rapidly along by cathartics, not only would dizziness and amblyopia be caused, but there would be bowel cramps, nausea, vomiting, and there might be muscle cramps, especially in the legs.

If the alkaloids be carefully prepared, the official preparation of pelletierinæ tannas, which is a mixture of the alkaloids of the pomegranate, should be an efficient preparation. The dose listed in the Pharmacopeia is 0.25 gram (4 grains).

Dr. Spier has never seen serious or persistent unpleasant symptoms occur from the administration of pomegranate as he has described it.

New and Nonofficial Remedies

SINCE THE PUBLICATION OF THE BOOK "NEW AND NONOFFICIAL REMEDIES, 1909," THE FOLLOWING ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK ARE ASKED FOR.

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT SO FAR AS KNOWN IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

(Continued from page 460)

CEPHAELINE—Cephaelina.—An alkaloid, $C_{14}H_{20}NO_2$, obtained from ipecacuanha root.

Cephaelin occurs as snow-white, fine, interlacing needles which readily turn yellow. It is soluble in ether and caustic soda solutions, melts at 96°-102° C (204.8°-215.6° F) and turns brown when heated to 120° C (248° F). With Fröhde's reagent, a freshly prepared solution of 0.1 Gm. sodium molybdate in 10 Cc. concentrated sulphuric acid, it gives a purple color which hydrochloric acid changes to prussian blue.

Action and Uses.—These are identical with those of ipecac. It is relatively more emetic and less nauseant and causes relatively more renal irritation and less cardiac depression. It may be employed as an emetic and expectorant.

Dosage.—0.005 to 0.01 Gm. (1/12 to 1/6 grain) in pills or as a powder triturated with sugar of milk. The hydrochloride is soluble.

HOLADIN AND BILE SALTS, Fairchild.—This preparation is a mixture of Holadin (which see) 5 parts with bile salts, Fairchild (which see) 1 part, put up in 3 grain capsules, containing holadin approximately 0.15 Gm. (2½ grains), and bile salts 0.03 Gm. (½ grain).

Dosage.—One capsule about three hours after meals and one capsule at bedtime.

Prepared by Fairchild Bros. & Foster, New York.

NOVOCAINE NITRATE—Novocainæ Nitras.—Novocaine nitrate, $C_6H_4.NH_2(COO.C_2H_4.N(C_2H_5)_2.HNO_3 = C_{13}H_{21}O_5N_3$, is the nitrate of p—aminobenzoyldiethylaminoethanol, the base contained in novocaine.

Novocaine nitrate occurs in small colorless and odorless crystals, soluble in water and alcohol. The aqueous solution is neutral in reaction. Melting point 100°-102° C. (212°-215° F.).

If 0.1 Gm. novocaine nitrate be dissolved in 1 Cc. concentrated sulphuric acid and a solution of ferrous sulphate carefully floated above it, a brown zone is formed at the surface of contact of the two solutions. 1 part novocaine nitrate dissolved in 10 parts water and acidified with nitric acid, should yield no precipitate upon the addition of silver nitrate solution.

Actions and Uses.—As for novocaine; may be prescribed in combination with silver salts, with which it forms no precipitate.

Dosage.—Used in 3 per cent. solutions.

Manufactured by Farbewerke vorm Meister, Lucius & Bruening. Hoechst A. M. (Victor Koechl & Co., New York).

Patents or trademarks: None.

(To be continued)

MEDICAL COLLEGES OF THE UNITED STATES

Below are given brief descriptions of the medical colleges in the United States that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated is given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students, graduates, name of dean and next session is given without discrimination, regardless as to whether the college is sectarian or not. In the few instances where such reports were not received the information published is from other reliable sources. Extracts of rules and the membership of each of the college associations is shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's estimates for 1906.

ALABAMA

Alabama, population 2,017,877, has two medical colleges, the Medical Department of the University of Alabama and the Birmingham Medical College, located, respectively, in Mobile and Birmingham. The population of Mobile is 42,903 and of Birmingham 45,869.

Birmingham

BIRMINGHAM MEDICAL COLLEGE. Avenue F and Twentieth Street.—Chartered in 1894. The first class graduated in 1895. There are 22 professors and 10 assistants, total 32. The course of instruction embraces four separate sessions of seven months each. The fees are $75 for each of the first three years and $100 for the fourth. The Dean is Dr. B. L. Wyman. Registration, 1908-9, 169, graduates, 28. The sixteenth session begins Sept. 29, 1909, and ends Apr. 28, 1910.

Mobile

MEDICAL DEPARTMENT OF THE UNIVERSITY OF ALABAMA. St. Anthony and Lawrence Sts.—Organized in 1859 as the Medical College of Alabama. Classes were graduated in 1861 and in all subsequent years except 1862 to 1868, inclusive. It was reorganized as the Medical Department of the University of Alabama in 1897. All property was transferred to the University of Alabama and the present title assumed in 1907. The faculty consists of 8 professors and 17 lecturers and assistants, a total of 25. The course of study covers four years of seven months each. The total fees for each of the first three years is $100; for the fourth year, $125. The Dean is Dr. Rhett Goode. The total registration for 1908-9 was 191, graduates, 29. The forty-fourth session begins Sept. 20, 1909, and ends Apr. 18, 1910.

ARKANSAS

Arkansas, population 1,421,574, has two medical colleges, the Medical Department of the University of Arkansas and the College of Physicians and Surgeons, both located in Little Rock, a city of 39,959 people.

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT, Second and Sherman Streets.—Organized in 1879 as the Arkansas Industrial University. The first class graduated in 1880. It assumed the present title in 1899. The faculty consists of 19 professors and 13 lecturers and assistants, total 32. The course of study covers four years of seven months each. The fees are: Matriculation, $5, paid but once; tuition, per year, $60; graduation fee, $25. The Secretary is Dr. C. E. Witt. Total registration, 1908-9, was 179; graduates, 22. The fourteenth session begins Oct. 1, 1909, and ends Apr. 30, 1910.

COLLEGE OF PHYSICIANS AND SURGEONS. Lincoln Avenue, north of the Union Station.—It was organized in 1906. The first class graduated in 1907. The faculty consists of 30 professors and 12 lecturers and assistants, a total of 42. The course of study covers four years of seven months each. The Dean is Dr. J. P. Runyan. The total registration for 1908-9 was 81, graduates, 14. The third session begins Oct. 1, 1909, and ends May 1, 1910.

CALIFORNIA

California, population 1,648,049, has seven medical colleges. Four are located in San Francisco, a city having, before the earthquake, 355,919 inhabitants. They are Leland Stanford Junior University College of Medicine, Medical Department of the University of California, Hahnemann Medical College of the Pacific and the College of Physicians and Surgeons. The College of Physicians and Surgeons and the California Eclectic Medical College are situated in Los Angeles, population 116,420. The Oakland College of Medicine and Surgery is in Oakland, population 73,812.

Los Angeles

COLLEGE OF PHYSICIANS AND SURGEONS. 516 E. Washington Street.—It was organized in 1903. The first class graduated in 1905. The course covers four years of nine months each. The faculty consists of 29 professors and 13 lecturers and instructors, a total of 42. The fees for the four years respectively are $135, $132, $107 and $132. The Dean is Dr. Charles W. Bryson, Delta Building, Los Angeles. The registration for 1908-9 was 32, graduates 5. The seventh session begins Sept. 5, 1909, and ends June 15, 1910.

CALIFORNIA ECLECTIC MEDICAL COLLEGE. 846 Lyon Street.—Organized in 1879 at Oakland as the California Medical College. Removed to San Francisco in 1887. Suspended in 1906. Reorganized at Los Angeles with the present title in 1907. Classes were graduated in 1880, and in all subsequent years except 1907. It has a faculty of 27 professors. The Dean is Dr. J. A. Munk. The registration for 1908-9 was 7; graduates 4. The thirtieth session begins Sept. 13, 1909, and ends May 21, 1910.

Oakland

OAKLAND COLLEGE OF MEDICINE AND SURGERY. Thirty-first and Grove streets.—Organized in 1900, opened in 1902. The first class graduated in 1906. The faculty numbers 33. The course covers four years of nine months each, and the classes are limited to ten students each. The total fees for each of the four years respectively are $165, $160, $150 and $175. The Registrar is Dr. Edward N. Ewer. The total registration for 1908-9 was 17; graduates, 4. The eighth session begins Aug. 15, 1909, and ends about May 21, 1910.

San Francisco

HAHNEMANN MEDICAL COLLEGE OF THE PACIFIC. Homeopathic. Sacramento and Maple streets.—Organized in 1881 as the Hahnemann Medical College. The first class graduated in 1884. In 1888 it became the Hahnemann Hospital College of San Francisco. It assumed the present name in 1902. It has a faculty of 19 professors and 13 lecturers, instructors, etc., a total of 32. The course covers four years of seven months each. Total fees for the first year are $155, and $100 for each of the other three. The Dean is Dr. James W. Ward, 1380 Sutter Street. The total registration for 1908-9 was 23; graduates 6. The 28th session begins Aug. 31, 1909, and ends Apr. 28, 1910.

COLLEGE OF PHYSICIANS AND SURGEONS. 344 Fourteenth Street.—Organized in 1896. The first class graduated in 1897. The faculty numbers 60. The course covers four years of thirty weeks each. The President is Dr. Winslow Anderson. Registration for 1908-9 was 40; graduates 11. The fourteenth session begins Sept. 14, 1909, and ends May 14, 1910.

San Francisco-Palo Alto

LELAND STANFORD JUNIOR UNIVERSITY, COLLEGE OF MEDICINE. University Campus, Palo Alto, and Sacramento and Webster Streets, San Francisco.—Organized in 1858 as the Medical Department of the University of the Pacific. Discontinued in 1864. Revived in 1870. It became the Medical College of the Pacific. Medical Department of the University College of San Francisco in 1873. Became Cooper Medical College in 1882. United with Leland Stanford Junior University with present title in 1908. Classes were graduated in 1860, and in all subsequent years, except 1865 to 1869, inclusive. Three years of collegiate work are required for admission. The work of the first three semesters will be given at Palo Alto, the last five semesters at San Francisco. The faculty consists of 18 professors and 36 lecturers, instructors, etc., 54 in all. The course covers four years of eight and a half months each. Fees: First year, $175; second and third years, $170 each; fourth year, $195. The secretary is Dr. William Fitch Cheney. Total registration for 1908-9 was 117; graduates, 22. The forty-first session begins Aug. 15, 1909, and ends May 7, 1910.

San Francisco-Berkeley-Los Angeles

UNIVERSITY OF CALIFORNIA, MEDICAL DEPARTMENT. University Campus, Berkeley; Second and Parnassus Avenues, San Francisco and Buena Vista and Alpine Streets, Los Angeles.—Organized in 1863 as the Toland Medical College. The first class graduated in 1865. In 1872 it became the Medical Department of the University of California. In 1909 it absorbed the College of Medicine of the University of Southern California, which became a clinical department at Los Angeles. Two years of collegiate work are required for admission. At the San Francisco Department only the last two or clinical years are taught, the first two being at Berkeley. At the Los Angeles Department during the session of 1909-10 the work of the last three years will be taught, but beginning with the session of 1910-11 and thereafter all the work of the first two years will be at Berkeley and the work of the last two years at either Los Angeles or San Francisco. The faculty is composed of 43 professors and 80 associates and assistants, a total of 123. The course covers four years of nine months each. The fees are: Matriculation, $5; tuition, $150 each year; laboratory fees extra. The Dean at San Francisco is Dr. Arnold A. D'Ancona; at Los Angeles, Dr. W. Jarvis Barlow. Total registration of the two schools for 1908-9 was 108; graduates, 23. The thirty-seventh session begins Aug. 15, 1909, and ends May 11, 1910.

COLORADO

Colorado, with a population of 615,570, has three medical colleges. Two of these, Denver and Gross College of Medicine

and the Denver College of Physicians and Surgeons, are in Denver, which has a population of 151,920, the other, the Colorado School of Medicine, is at Boulder, population 12,000.

Boulder

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years, except 1898 and 1899. The faculty embraces 25 professors and 22 lecturers and assistants, a total of 47. The work embraces a graded course of four years of nine months each. Beginning with the session of 1910-11 the entrance requirements will be two years of college work counting toward a degree in arts in an accredited college or university. The tuition is $52 per year; there are no other fees. The Dean is Dr. William P. Harlow. The total registration for 1908-9 was 54; graduates, 11. The twenty-eighth session begins Sept. 13, 1909, and ends June 8, 1910.

Denver

THE DENVER AND GROSS COLLEGE OF MEDICINE, 1025 Fourteenth Street.—It is the Medical Department of the University of Denver. Organized in 1902 by the union of the Gross Medical College (organized in 1887) with the Denver College of Medicine (organized in 1880). Classes were graduated in 1903 and in all subsequent years. The faculty is made up of 33 professors, 38 assistants and instructors, a total of 71. The course covers four years of eight months. Fees for each of the four years respectively are $130, $130, $131 and $126. The Dean is Dr. George H. Stover, 1443 Glenarm Pl. The total registration for 1908-9 was 109; graduates, 23. The twenty-eighth session begins Sept. 28, 1909, and ends May 26, 1910.

DENVER COLLEGE OF PHYSICIANS AND SURGEONS (Regular and Homeopathic), 1317 Fourteenth Street.—Organized in 1894 as the Denver Homeopathic College. The name was changed in 1907 to the Westminster University College of Medicine and again in 1908 to the present title. Since 1907 it has offered to teach two systems of medicine. Its faculty numbers 46. The Dean is Dr. David A. Strickler. The total registration for 1908-9 was 34; graduates, 7. Next session begins Sept. 6, 1909, and ends May 12, 1910.

CONNECTICUT

Connecticut, with a population of 1,005,716, has only one medical college, located in New Haven, population 121,227.

New Haven

YALE MEDICAL SCHOOL, York and Chapel Streets.—This is the Department of Medicine of Yale University. In 1810 a charter was granted for the establishment of this school, and in 1813 it was organized as the Medical Institution of Yale College. The first class graduated in 1814. The faculty consists of 14 professors and 50 lecturers and assistants, a total of 64. The requirements for admission are two full years of collegiate work of fifteen hours per week. The course covers four years of nine months each. The fees are $150 each year; in the first year there are additional fees amounting to $18, and in the second $8, and there is a graduation fee of $10. The Dean is Dr. Herbert E. Smith, New Haven. The total registration for 1908-9 was 141; graduates, 15. The ninety-seventh session begins Sept. 30, 1909, and ends June 22, 1910.

DISTRICT OF COLUMBIA

Washington, population 307,716, has three medical colleges; George Washington University Department of Medicine, Georgetown University School of Medicine and Howard University Medical Department.

Washington

GEORGE WASHINGTON UNIVERSITY, DEPARTMENT OF MEDICINE, 1325 H Street, N.-W.—Organized in 1825 as the National Medical College, Medical Department of Columbian College. Classes were graduated in 1826 and in all subsequent years, except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1904, by an act of Congress, it received its present title. The faculty is composed of 42 professors and 40 instructors, demonstrators and assistants, a total of 82. The course covers four years of eight months each. The total fees are $150 per year. The Dean is Dr. William C. Borden. The total registration for 1908-9 was 156; graduates, 33. The eighty-eighth session begins Sept. 29, 1909, and ends June 8, 1910.

GEORGETOWN UNIVERSITY, SCHOOL OF MEDICINE, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 20 professors, 54 instructors and assistants; total 74. The course of study covers four terms of eight and one-half months each. The fees are $150 each year. The Dean is Dr. George M. Kober, 1600 T Street. The registration for 1908-9 was 89; graduates, 15. The fifty-ninth session begins Oct. 1, 1909, and ends June 11, 1910.

HOWARD UNIVERSITY, MEDICAL DEPARTMENT, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Colored students compose a majority of those in attendance. The faculty comprises 22 professors and 30 lecturers and assistants, 52 in all. The course covers four years of eight months each. The fees of each session are $100, plus $10 for graduation. The Secretary is Dr. William C. McNeill. Registration for 1908-9 was 205; graduates, 26. The forty-second session begins Oct. 1, 1909, and ends June 1, 1910.

GEORGIA

Georgia, population 2,443,719, has five medical colleges; Medical College of Georgia, located in Augusta, population 43,125; Atlanta College of Physicans and Surgeons, Atlanta School of Medicine, the Georgia College of Eclectic Medicine and Surgery, and the Hospital Medical College are in Atlanta, a city of 104,984 population.

Atlanta

ATLANTA COLLEGE OF PHYSICIANS AND SURGEONS, Butler and Armstrong Streets.—Organized in 1898 by union of the Atlanta Medical College, organized in 1855, and Southern Medical College, organized in 1878. The first class graduated in 1899. It has a faculty of 23 professors and 28 assistants, a total of 51. The course of study covers four years of seven months each. Fees: First and second years, $80 each; third and fourth, $100 each. The Dean is Dr. W. S. Elkins, 29 Luckie St. Total registration of students for 1908-9 was 280; graduates, 37. The twelfth session begins Sept. 27, 1909, and ends May 1, 1910.

ATLANTA SCHOOL OF MEDICINE, Luckie, Barton and Cain Streets.—Organized in September, 1905. The first class graduated in 1906. The course covers four years of seven months each. It has a faculty of 13 professors and 27 lecturers and assistants, a total of 40. The fees for each of the first two years are $70; for each of the last two, $80. The Proctor is Dr. Edward G. Jones. The total registration for 1908-9 was 281; graduates, 51. The fifth session begins Oct. 1, 1909, and ends May 1, 1910.

GEORGIA COLLEGE OF ECLECTIC MEDICINE AND SURGERY, Tanner Street, near Edgewood Avenue.—Organized in 1877 as the Georgia Eclectic Medical College. In 1884 it acquired the charter of the College of American Medicine and Surgery. It assumed its present name in 1886. The first class graduated in 1878. The faculty consists of 14 professors and 6 assistants, a total of 20. Tuition is $80 per year; graduation fee, $25. The Proctor is Dr. E. B. Thomas. Total registration for 1908-9 was 66; graduates, 15. The next session begins Sept. 21, 1909, and ends Apr. 21, 1910.

HOSPITAL MEDICAL COLLEGE, Eclectic, Capitol Avenue and Richardson Street.—Organized in 1908. The faculty consists of 16 professors, and 8 lecturers and assistants, a total of 24. The tuition fees are $80 each year; graduation fee, $30. The Dean is Dr. William Bernard Lingo. Total registration for 1908-9 was 43; graduates, 17. The next session begins Sept. 15, 1909, and ends April 1, 1910.

Augusta

MEDICAL COLLEGE OF GEORGIA, Sixth and Telfair Streets.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Classes were graduated in 1833 and in all subsequent years, except 1862 and 1863, inclusive. The faculty includes 17 professors and 17 assistants, 34 in all. The course is four years of seven months each. Fees for the four years respectively are $90, $85, $100, $100. The Dean is Dr. Joseph Eve Allen. The total registration for 1908-9 was 99; graduates, 22. The seventy-eighth session begins Oct. 1, 1909, and ends May 1, 1910.

ILLINOIS

Illinois, population 5,418,670, has thirteen medical colleges, four of which are night schools, all located in Chicago, a city of 2,049,185 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, College of Physicians and Surgeons, Hahnemann Medical College, Bennett Medical College, Hering Medical College, Jenner Medical College, Illinois Medical College, American Medical Missionary College, College of Medicine and Surgery, National Medical University, Chicago College of Medicine and Surgery and Reliance Medical College.

Chicago

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 89 professors, 141 associates, instructors, etc., a total of 230. The requirements for admission are a four-year high school education and, in addition thereto, two years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. The course covers four years of nine months each. An optional fifth year, consisting of a hospital interneship or of a fellowship in one of the departments is offered. All freshmen and sophomore studies are given at the University of Chicago. The last two years are given in the clinical buildings at the corner of Wood and Harrison Streets. The total fees are $180 each year. A matriculation fee of $5 is paid but once, and there are incidentals amounting to from $2 to $5 annually. The Dean is Dr. John M. Dodson, 34 Washington Street. Total registration 1908-9 was 488; graduates, 74. The sixty-seventh session begins Oct. 1, 1909, and ends June 18, 1910.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, Dearborn Street, between Twenty fourth and Twenty-fifth Streets.—Organized in 1859 as the Medical Department of Lind University. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. The faculty comprises 54 professors and 89 lecturers and assistants, a total of 143. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University plus two years of college work including courses in physics, chemistry, biology and modern languages. The course covers four years of thirty-six weeks each. The fees for the first year are $194; second year, $200; third year, $191.50, and fourth year, $185. The Secretary is Dr. Charles Louis Mix. The total registration for 1908-9 was 621; graduates, 172. The fiftieth session begins Oct. 5, 1909, and ends May 29, 1910.

COLLEGE OF PHYSICIANS AND SURGEONS, Honore and Congress Streets.—Organized in 1882. The first class graduated in 1883. It became the Medical Department of the University of Illinois in 1896. The faculty is composed of 42 professors, 156 assistants and instructors, a total of 198. The fees are $145 each for the first two years, $150 for the third, and $175 for the fourth year. The Dean is Dr. William E. Quine, 103 State Street. Total registration for 1908-9 was 517; graduates, 130. The twenty-eighth session begins Sept. 28, 1909, and ends June 7, 1910.

AMERICAN MEDICAL MISSIONARY COLLEGE, 888 Thirty-fifth Place.—Organized in 1895. The first class graduated in 1899. Part of the work is given at Battle Creek, Michigan. The faculty numbers 22 professors and 10 assistants, a total of 32. The course covers four years of nine months each. Total fees for the four years respectively are $83, $82, $75, $75. The Secretary is Dr. E. L. Eggleston, Battle Creek, Mich. Total registration for 1908-9 was 60; graduates, 5. The fifteenth session opens Sept. 14, 1909, and closes June 15, 1910.

CHICAGO COLLEGE OF MEDICINE AND SURGERY, 337 South Lincoln Street.—Organized in 1901 as the American College of Medicine and Surgery (Chicago Eclectic Medical College). The latter part of the name was dropped in 1902 when it became the Medical Department of Valparaiso University. Eclecticism was dropped in 1905. The name was changed to the above in 1907. The course covers four years of eight months each. The faculty consists of 37 professors and 34 lecturers and assistants, a total of 71. The total fees for each of the four years respectively are $120, $115, $100 and $115. The total registration for 1908-9 was 396; graduates, 80. The ninth session begins Sept. 27, 1909, and ends May 16, 1910. The Secretary is Dr. J. N. Roe.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF CHICAGO, 2811 Cottage Grove Avenue.—Organized in 1859. The first class was graduated in 1861. The faculty includes 38 professors and 46 lecturers, assistants, etc., a total of 84. The tuition fees are $100 each year. The Registrar is Dr. W. Henry Wilson. The total registration for 1908-9 was 132; graduates, 25. The fiftieth session begins Sept. 27, 1909, and ends May 26, 1910.

HERING MEDICAL COLLEGE, Homeopathic, Wood and York Streets.—Organized in 1892. The first class graduated in 1893. The faculty consists of 26 professors and 24 assistants, instructors, etc., a total of 50. The tuition fees are $100 per year. The Dean is Dr. Robert N. Morris. The total registration for 1908-9 was 40; graduates, 10. The next session begins Sept. 28, 1909, and ends June 2, 1910.

ILLINOIS MEDICAL COLLEGE, Corner Washington Boulevard and Halsted Street.—It was organized in 1894. Classes were graduated in 1895 and in all subsequent years. The faculty consists of 38 professors and 20 lecturers and assistants, a total of 58. The course covers four years of seven months each. The fees are about $125 each year. The President is Dr. J. F. Burkholder. The total registration for 1908-9 was 62; graduates, 16. The fifteenth session begins Sept. 2, 1909, and ends April 29, 1910.

BENNETT MEDICAL COLLEGE, Fulton and Ada Streets.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Dropped Eclecticism in 1909. The first class graduated in 1870. The faculty numbers 57. The course covers four years of thirty weeks each. Fees for each year are $100, with a matriculation fee, paid once, of $5. The President is Dr. John D. Robertson. The total registration for the college year 1908-9 was 186; graduates, 39. The next session begins Sept. 21, 1909, and ends May 23, 1910.

COLLEGE OF MEDICINE AND SURGERY, Physiomedical, 721-725 South Wood Street.—Organized in 1885 as the Chicago Physiomedical Institute. The first class graduated in 1886. In 1891 the name was changed to the Chicago Physiomedical College. In 1899 it took its present name. The faculty numbers 49. The school year has three divisions of 16 weeks each. Attendance on any two will constitute a year's work. Fees for the four years respectively are $115, $110, $110 and $135. The Secretary is Dr. William F. Schaare. The total registration for 1908-9 was 33; graduates, 10. The next session begins Sept. 21, 1909, and ends May 11, 1910.

JENNER MEDICAL COLLEGE, a night school, located at 196 East Washington Street.—Organized in 1892. Classes were graduated in 1896 and in all subsequent years. The faculty numbers 50. Registrar, Dr. John D. MacKellar. Total registration for 1908-9 was 112; graduates, 12. The next session begins Aug. 30, 1909, and ends July 1, 1910.

NATIONAL MEDICAL UNIVERSITY, a night school located at 531 Wells Street.—Organized in 1891 as the National Homeopathic Medical College. The first class was graduated in 1902. In 1895 the word "Homeopathic" was dropped. It took the above name in 1900. The faculty numbers 36. The total fees are $150 each year. The Dean is Dr. L. D. Rogers. Total registration for 1908-9 was 150; graduates, 12. *Reported to be not in good standing by the Illinois State Board of Health.*

RELIANCE MEDICAL COLLEGE. A night school, located at Washington Boulevard and Halsted Street.—Organized in 1907. The faculty numbers 65. The total fees are $130 for each of the first two years and $125 for each of the last two. Registration for 1908-9 was 83; graduates, 18. The President is Dr. J. F. Burkholder. The next session begins Sept. 7, 1909, and ends June 29, 1910.

INDIANA

Indiana, population 2,710,898, has two medical colleges, the Indiana University School of Medicine and the Physio-Medical College of Indiana. Both are located at Indianapolis, a city of 219,154 people, except that the work of the first two years of the Indiana University School of Medicine is offered also at Bloomington, population 5,000, the seat of the University.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1893, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1907 by the merger of the Medical College of Indiana (organized in 1879) and the Fort Wayne College of Medicine (organized in 1879) merged into it. The faculty consists of 99 professors and 76 lecturers, associates and assistants, a total of 175. In 1909, besides a four-year high school education, one year, and in 1910 and thereafter, two years of collegiate work will be required for admission. The work of the first two years may be taken either at Bloomington or at Indianapolis. The clinical work is all done at Indianapolis. A fifth optional year leading to the "M.D. *cum laude*" has been added. The Secretary at Bloomington is Dr. B. D. Myers; at Indianapolis, Dr. Edmund D. Clark, Newton-Claypool Bldg. The total registration for 1908-9 was 266; graduates, 64. The next session begins Sept. 21, 1909, and ends June 22, 1910.

PHYSIOMEDICAL COLLEGE OF INDIANA. Fourteenth Street and College Avenue.—Organized in 1873. The first class graduated in 1874. The Dean is Dr. C. T. Bedford. The total registration for 1908-9 was 19; graduates, 5.

IOWA

Iowa, population 2,205,690, has four medical colleges. The College of Medicine of the State University of Iowa and the College of Homeopathic Medicine of the State University of Iowa are located in Iowa City, population 8,497. In Des Moines, population 78,323, is the College of Medicine of Drake University. In Sioux City, population 42,520, is the Sioux City College of Medicine.

Des Moines

DRAKE UNIVERSITY COLLEGE OF MEDICINE.—First two years given on the University Campus, University Avenue, between Twenty-fifth and Twenty-eighth Streets, the clinical years at Fourth and Center Streets. Organized in 1882 as the Iowa College of Physicians and Surgeons. The first class graduated in 1883. In 1887 it became affiliated with and in 1900 became the Medical Department of Drake University. The faculty consists of 21 professors and 26 assistants, lecturers, etc., a total of 47. Beginning with the session of 1910-11 two years of collegiate work, including courses in physics, chemistry and histology, will be required for admission. The work covers four years of nine months each. The total fees are $75 each year. The Dean is Dr. William Wilson Pearson. The total registration for 1908-9 was 130; graduates, 19. The twenty-seventh session begins Sept. 20, 1909, and ends June 15, 1910.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE. University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. The faculty is made up of 20 professors, 20 lecturers, demonstrators and assistants, a total of 32. For the session of 1909-10 one year and for the session of 1910-11 and thereafter two years of collegiate work, including courses in physics, chemistry and biology, will be required for admission. The course of study covers four years of thirty-six weeks each. Total fees for each year are $50 plus a matriculation fee of $10 paid but once and a graduation fee of $10. The Dean is Dr. James R. Guthrie, Dubuque; Vice-Dean, Dr. Walter L. Bierring, Iowa City. Total number of students registered for 1908-9 was 266; graduates, 41. The 40th session begins Sept. 20, 1909, and ends June 15, 1910.

STATE UNIVERSITY OF IOWA COLLEGE OF HOMEOPATHIC MEDICINE.—Organized in 1877. The first class graduated in 1878. The faculty is composed of 10 professors and 15 lecturers and assistants, a total of 25. The work of the first two years is taken in classes with the students of the College of Medicine of the State University of Iowa. The fees are $50 each year, plus a matriculation fee of $10, paid but once and a graduation fee of $10. The Dean is Dr. George Royal. Total registration for 1908-9 was 42; graduates, 7. The thirty-second session begins Sept. 20, 1909, and ends June 15, 1910.

Sioux City

SIOUX CITY COLLEGE OF MEDICINE, corner of Fourteenth and Jones Streets.—Organized in 1891. The first class graduated in 1893. Teaches only the last two or clinical years of the medical course. The total registration for 1908-9 was 20; graduates, 6. The Dean is Dr. F. E. Franchere.

KANSAS

Population 1,612,471, has three medical colleges. Kansas Medical College is in Topeka, population 41,880, and the Western Eclectic College of Medicine and Surgery is at Kansas City. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,123, and the last two years in Rosedale, a suburb of the two Kansas Cities, which together have a population of 260,288.

Kansas City

WESTERN ECLECTIC COLLEGE OF MEDICINE AND SURGERY, Central and Simpson Avenues.—Organized at Kansas City, Mo., in 1898 as the Eclectic Medical University. Moved to Kansas City, Kan., in 1907. Took the present name in 1908. First class graduated in 1900. The faculty numbers 32. Fees for the four years respectively are $90, $95, $100 and $115. Course covers four years of about eight months each. The Secretary is Dr. W. H. Smith. The total registration for 1908-9 was 50; graduates, 7. The twelfth session begins Sept. 6, 1909, and ends April 30, 1910.

Lawrence and Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. In 1905 it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. The faculty, including lecturers and clinical assistants, numbers 79. The requirements for admission are two years of collegiate work. The course covers four years of about nine months each. The total fees are, for the first two years, $60 per year (and for non-residents of the state $70); for the last two years, $100 per year. The Dean at Lawrence is Dr. Mervin T. Sudler. The Dean at Kansas City is Dr. George Howard Hoxie. The total registration for 1908-9 was 90; graduates, 7. The thirtieth session begins Sept. 15, 1909, and ends June 8, 1910.

Topeka

KANSAS MEDICAL COLLEGE, 521 Quincy Street.—Organized in 1890. The first class graduated in 1892. It has been the Medical Department of Washburn College since 1893. It has a faculty of 31 professors and 16 lecturers and assistants, a total of 47. The course covers four years of thirty weeks each. Fees, $65 yearly. The Dean is Dr. William E. McVey. Total registration for 1908-9 was 68; graduates, 17. The twentieth session begins Sept. 14, 1909, and ends June 8, 1910.

KENTUCKY

Kentucky, population 2,320,298, has three medical colleges. They are all situated in Louisville, a city of 226,129 inhabitants, and are as follows: University of Louisville Medical Department, Southwestern Homeopathic Medical College and Louisville National Medical College.

Louisville

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT, Eighth and Chestnut Streets.—Organized in 1837 as the Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except 1863. In 1846 the present name was assumed. In 1907 it absorbed the Kentucky University Medical Department. In 1908 it absorbed the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. It has a faculty of 28 professors and 27 lecturers and assistants, a total of 55. The course covers four years of thirty weeks each. The fees are $100 each year; graduation fee, $25. The Dean is Dr. T. C. Evans. The total registration for 1908-9 was 706, graduates, 181. The next session begins Nov. 15, 1909, and ends June 30, 1909.

SOUTHWESTERN HOMEOPATHIC MEDICAL COLLEGE AND HOSPITAL, Floyd and Walnut Streets.—Organized in 1892. The first class graduated in 1894. It has a faculty of 13 professors and 10 lecturers and assistants, 23 in all. The curriculum covers four years of seven months each. Total fees: First three years $75 each and $95 for the fourth. The Dean is Dr. George S. Coon. Total number of students for 1908-9 was 13; graduates, 3. The seventeenth session begins Oct. 6, 1909, and ends May 19, 1910.

LOUISVILLE NATIONAL MEDICAL COLLEGE. Colored. 112 West Green Street.—Organized in 1888. The first class graduated in 1889. The faculty numbers 28. The course covers four years of seven months each. The fees are $60, $55, $55 and $75 for the four years, respectively. The Dean is Dr. E. S. Porter. Total registration for 1908-9 was 40; graduates, 4. The next session begins Oct. 1, 1909, and ends May 18, 1910.

LOUISIANA

Louisiana, having a population of 1,539,449, contains two medical colleges: Medical Department of the Tulane University of Louisiana and Flint Medical College of New Orleans University. They are both situated in New Orleans, a city of 314,146 people.

New Orleans

MEDICAL DEPARTMENT OF THE TULANE UNIVERSITY OF LOUISIANA, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years, except 1863-1865, inclusive. It was transferred to Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University in 1884. The faculty numbers 73. The course covers four years of seven months each. Total fees are $150 per year. The Dean is Dr. Isadore Dyer. The total registration for 1908-9 was 439; graduates, 103. The seventy-sixth session begins Oct. 1, 1909, and ends May 18, 1910.

FLINT MEDICAL COLLEGE OF NEW ORLEANS UNIVERSITY. Colored. 1566 Canal Street.—Organized in 1889 as the Medical College of New Orleans University. A class was graduated in 1892 and in each subsequent year, except 1896. Took the above name in 1901. The faculty consists of 6 professors, 9 lecturers and instructors, 15 in all. The course covers four years of thirty weeks each. Total fees, $53 each year for the first three years and $60 for the fourth. The Dean is Dr. J. W. Thomas. Total registration for 1908-9 was 24; graduates, 6. The twentieth session begins Sept. 22, 1909, and ends May 12, 1910.

MAINE

Maine, population 714,494, has one medical college, located in Brunswick and Portland, the latter having a population of 55,167.

Brunswick-Portland

MEDICAL SCHOOL OF MAINE. The medical department of Bowdoin College. The first two years are given at Bowdoin College, Brunswick, the last two at Portland, building located on Chadwick Street.—Organized in 1820. The first class graduated in 1820. The faculty numbers 35. The course covers four years of eight months each. The total fees are $120 for the first year and $110 for each of the other three years. The Dean is Dr. Alfred Mitchell, Brunswick. Total number of students in 1908-9 was 81; graduates, 18. The eighty-ninth session begins Oct. 21, 1909, and ends June 22, 1910.

MARYLAND

Maryland, with a population of 1,275,434, contains seven medical colleges, all located in Baltimore, a city with 553,669 inhabitants. They are as follows: Johns Hopkins University Medical Department, School of Medicine of the University of Maryland, College of Physicans and Surgeons, Baltimore Medical College, Woman's Medical College, Atlantic Medical College and Maryland Medical College.

Baltimore

JOHNS HOPKINS UNIVERSITY, MEDICAL DEPARTMENT, Washington and Monument Streets.—Organized in 1893. The first class graduated in 1897. The faculty consists of 23 professors and 89 clinical professors, etc., a total of 112. The requirements for admission demand that the applicant either has (a) completed the chemical-biologic course which leads to the A.B. degree in the university or (b) graduated at an approved college or scientific school and has a knowledge of French and German, physics, chemistry and biology, such as may be obtained from a year's course. The course extends over four years of eight and one-half months each. The charge for tuition is $200 per annum. The Dean is Dr. William H. Howell, 232 West Lanvale Street. Total registration for 1908-9 was 297; graduates, 50. The seventeenth session begins Oct. 5, 1909, and ends June 14, 1910.

COLLEGE OF PHYSICIANS AND SURGEONS, Calvert and Saratoga Streets.—Organized in 1872. The first class graduated in 1873. In 1878 it united with Washington University School of Medicine. The faculty numbers 57. The work covers four years of eight months each. Total fees are $155 for each of the first three years and $185 for the fourth year. The Dean is Dr. Charles F. Bevan. The total number of students registered in 1908-9 was 252; graduates, 46. The thirty-eighth session begins Oct. 1, 1909, and ends June 1, 1910.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. The faculty numbers 62. The course covers four years of eight months each. The total fees are $155 each year; graduation fee, $30. The Dean is Dr. R. Dorsey Coale. The total number of students registered in 1908-9 was 329; graduates, 89. The 103d session begins Oct. 1, 1909, and ends June 1, 1910.

BALTIMORE MEDICAL COLLEGE, Madison Street and Linden Avenue.—Organized in 1881. The first class graduated in 1882. The faculty numbers 69. The course covers four years of eight months each. Total fees are $125 per year. The Dean is Dr. David Streett. The total number of students registered in 1908-9 was 307; graduates, 57. The twenty-eighth session begins Sept. 20, 1909, and ends May 25, 1910.

WOMAN'S MEDICAL COLLEGE OF BALTIMORE, McCulloch and Hoffman Streets.—Organized in 1882. Classes graduated in 1883 and in each subsequent year, except 1898. The faculty numbers 32. The course covers four years of eight months each. The fees for the first three years are $106 each, and $86 for the last year. The Dean is Dr. John R. Abercrombie, 827 North Eutaw Street. The total registration for 1908-9 was 20; graduates, 5. The twenty-eighth session begins Oct. 1, 1909, and ends May 31, 1910.

MARYLAND MEDICAL COLLEGE, 1114 West Baltimore Street.—Organized in 1898. The first class graduated in 1899. The faculty is composed of 13 professors and 28 lecturers and assistants, a total of 41. The course covers four years of eight months each. Matriculation fee, $5; total fees for the first three years, $86 each; fourth year, $110. The Dean is Dr. Harry Gross. The total registration for 1908-9 was 95; graduates 37. The next session begins Sept. 25, 1909, and ends June 1, 1910.

ATLANTIC MEDICAL COLLEGE, Mount Street, north of Riggs Avenue.—Organized in 1891 as the Southern Homeopathic Medical College. In 1907 it assumed the above name and became nonsectarian. The Dean is Dr. Eldridge C. Price. The total registration for 1908-9 was 43; graduates, 25.

MASSACHUSETTS

Massachusetts, population 3,043,346, has four medical colleges: Medical School for Harvard University, Boston University School of Medicine, College of Physicians and Surgeons and Tufts College Medical School. They are all situated in Boston, a city of 602,278.

Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY, Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 33 professors and 133 associates, assistants, etc., a total of 166. Candidates for admission "must present a degree in arts, literature, philosophy or science from a recognized college or scientific school, with the exception of such persons as may be admitted by special vote of the faculty." Fees: Matriculation, $5; tuition, $200 each year. The Dean is Dr. Henry A. Christian. The total registration for 1908-9 was 285; graduates, 55. The 128th session begins Sept. 30, 1909, and ends June 30, 1910.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. The faculty includes 29 professors, 35 associates, etc., a total of 64. The course covers four years of eight months each. Total fees for the first, second and third years, $127 each, and for the last year, $155. The Dean is Dr. John P. Sutherland, 302 Beacon Street. Total registration for 1908-9 was 95; graduates, 18. The thirty-seventh session begins Oct. 7, 1909, and ends June 1, 1910.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 33 professors and 70 assistants, lecturers, etc., a total of 103. The course covers four years of eight months each. The total fees are $155 each year. The Secretary is Dr. Frederic M. Briggs, 31 Massachusetts Avenue. Total number of students for 1908-9 was 384; graduates, 61. The sixteenth session begins Sept. 29, 1909, and ends May 26, 1910.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. The Dean

is Dr. C. H. Cobb. The total registration for 1908-9 was 172; graduates, 12. The next session begins Sept. 16, 1909, and ends June 15, 1910.

MICHIGAN

Michigan, population 2,584,533, has four medical colleges. Two of these, the University of Michigan Department of Medicine and Surgery and the Homeopathic College of the University of Michigan, are located at Ann Arbor, a city of 14,645 people. Detroit, a city of 353,535 inhabitants, contains two medical colleges, the Detroit College of Medicine and the Detroit Homeopathic College.

Ann Arbor

UNIVERSITY OF MICHIGAN DEPARTMENT OF MEDICINE AND SURGERY.—Organized in 1850. The first class graduated in 1851. It has a faculty composed of 22 professors, 41 associates, instructors, etc., a total of 63. The entrance requirements are two years of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students for the entire course of four years is $350 and for others about $400. The Dean is Dr. Victor C. Vaughan. The total registration for 1908-9 was 404; graduates, 74. The 60th session begins Oct. 5, 1909, and ends June 30, 1910.

UNIVERSITY OF MICHIGAN HOMEOPATHIC COLLEGE.—Organized in 1875. The first class graduated in 1877. The Dean is Dr. W. B. Hinsdale. The total registration for 1907-8 was 82; graduates, 15.

Detroit

DETROIT COLLEGE OF MEDICINE, St. Antoine, Catherine and Mullett Streets and Gratiot Avenue.—Organized in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. The first class graduated in 1886. The faculty embraces 25 professors, 79 lecturers, instructors, etc., a total of 104. The course covers four years of eight months each. The Registrar is Dr. F. B. Walker. The total registration for 1908-9 was 161; graduates, 38. The twenty-fifth session begins Sept. 22, 1909, and ends May 26, 1910.

DETROIT HOMEOPATHIC COLLEGE, Lafayette Avenue and Third Street.—Organized in 1899. A class was graduated in 1900 and in each subsequent year. It has a faculty of 36. The course embraces four years of eight months each. Fees: From $75 to $95 per year. The Dean is Dr. D. A. MacLachlan; Registrar, J. M. Griffin. Total registration for 1908-9 was 34; graduates, 7. The eleventh session begins Sept. 14, 1909, and ends May 19, 1910.

MINNESOTA

Minnesota, population 2,025,615, contains one medical college, the College of Medicine and Surgery of the University of Minnesota, situated in Minneapolis. Minneapolis and St. Paul are practically one city, and have a combined population of 477,640.

Minneapolis

UNIVERSITY OF MINNESOTA COLLEGE OF MEDICINE AND SURGERY.—Organized in 1883; reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital Medical College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged and provision made for elective chairs in didactic materia medica and therapeutics. Students electing these courses on graduation will receive the degree of Doctor of Medicine in Homeopathy. The faculty includes 49 professors and clinical professors and 71 associate professors, assistants, etc., a total of 120. The curriculum covers four years of nine months each. The entrance requirements are two years of university work which must include one year each of physics, general chemistry, qualitative analysis, zoology or botany, and German or French, all in addition to a four-year high school course including Latin. Total fees for each year, $100; microscope rental, $4 to $7 per annum. The Dean is Dr. F. F. Wesbrook. The total registration for 1908-9 was 245, including 73 Hamline University students; the graduates of 1909 numbered 63, including 16 which were granted degrees by Hamline University. The twenty-second session begins Sept. 14, 1909, and ends June 9, 1910.

MISSISSIPPI

Mississippi, population 1,708,272, has two medical colleges, the Medical Department of the University of Mississippi is located at Oxford, a city of 2,000 inhabitants, and at Vicksburg, population 15,710. The Mississippi Medical College is located at Meridian, population 20,503.

Meridian

MISSISSIPPI MEDICAL COLLEGE, Fifth Street and Twenty-fourth Avenue.—Organized in 1906. The first class graduated in 1907. The faculty numbers 16. The Dean is Dr. T. A. Barber. The total registration for 1908-9 was 102; graduates, 15. The fourth session begins Oct. 1, 1909, and ends April 30, 1910.

Oxford and Vicksburg

UNIVERSITY OF MISSISSIPPI MEDICAL DEPARTMENT.—Organized in 1903. Gave only the first two years of the medical course until 1909, when a clinical department was organized at Vicksburg. The course covers four years of eight and a half months each. The work of the first two years is given at Oxford and the last two at Vicksburg. The faculty numbers 30. The Dean at Oxford is Dr. W. S. Leathers; at Vicksburg, Dr. William Krauss. The total registration for 1908-9 was 27. The seventh session begins Sept. 23, 1909, and ends June 1, 1910.

MISSOURI

Missouri, population 3,363,153, has ten medical colleges. St. Louis, population 649,320, contains six of these, viz., St. Louis College of Physicians and Surgeons, American Medical College, the School of Medicine of St. Louis University, Washington University Medical Department, Barnes Medical College and the Hippocratean College of Medicine. Kansas City, which with Kansas City, Kan., has a total population of 260,288, has two colleges, namely: University Medical College and the Hahnemann Medical College of Kansas City. Ensworth Medical College is located in St. Joseph, population 118,004. The Department of Medicine of the University of Missouri is at Columbia, a town of 8,000 people.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1859, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 13 professors, 14 assistant professors, lecturers, etc., a total of 27. The course covers two years of nine months each. The candidate for entrance must present, beside the diploma from a recognized four-year high school, credentials of college work as follows: English, 6 hours; German, 6 hours; general zoology, 6 hours; general physics, 6 hours; inorganic chemistry, 6 hours. Beginning in September, 1910, the entrance requirements will be two years of college work, including the subjects specified. Total fees amount to about $70 each year. The Dean is Dr. C. M. Jackson. Total registration of students for 1908-9 was 47; graduates, 5. The next session begins Sept. 23, 1909, and ends June 9, 1910.

Kansas City

UNIVERSITY MEDICAL COLLEGE OF KANSAS CITY, 911 East Tenth Street.—Organized in 1881 as the University of Kansas City Medical Department. The first class graduated in 1882. It was reorganized in 1888 under the present title. Its faculty comprises 47 professors and 19 lecturers and assistants, a total of 66. The course of study covers four years of thirty weeks each. The total fees for each year are $100; graduation fee, $25. The Dean is Dr. J. M. Frankenburger. The total registration for 1908-9 was 164; graduates, 47. The twenty-eighth session begins Sept. 8, 1909, and ends May 13, 1910.

KANSAS CITY HAHNEMANN MEDICAL COLLEGE, 1020 East Tenth Street.—Organized in 1888 as the Kansas City Homeopathic Medical College. The first class graduated in 1899. In 1902 it united with the Hahnemann Medical College of the Kansas City University, taking the present title. The Dean is Dr. William E. Cramer. Total registration for 1908-9 was 46; graduates, 14.

St. Joseph

THE ENSWORTH MEDICAL COLLEGE, Seventh and Jule Streets.—Organized in 1876 as the St. Joseph Hospital Medical College. In 1882 it merged with the College of Physicians and Surgeons to form the St. Joseph Medical College. In 1888 changed name to Ensworth Medical College. In 1905 merged with the Central Medical College, organized in 1894, to form the Ensworth-Central Medical College. In 1907 the present title was resumed. The faculty numbers 34. The course covers four years of eight months each. The fees for the four years respectively are $90, $95, $75 and $95. The Secretary is Dr. T. E. Potter. Total registration for 1908-9 was 72; graduates, 24. The next session begins Sept. 20, 1909, and ends May 10, 1910.

St. Louis

WASHINGTON UNIVERSITY MEDICAL DEPARTMENT, 1806 Locust Street.—Organized in 1842 as the Medical Department of St. Louis University. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. The faculty comprises 48 professors, 51 lecturers and instructors, a total of 99. The course is four years of eight months each. The total fees for the four years are respectively $137.50, $132.25, $117.25 and $101.25. The Dean is William H. Warren, Ph.D. The total registration for 1908-9 was 201; graduates, 48. The next session begins Sept. 21, 1909, and ends June 2, 1910.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, Grand Avenue and Caroline Street.—Organized in 1901 by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 39 professors, 82 lecturers and assistants, a total of 121. The curriculum covers four years of eight months each. The total fees are $110 each year. The Dean is Dr. E. P. Lyon. The total registration for 1908-9 was 243; graduates, 47. The next session begins Oct. 1, 1909, and ends May 29, 1910.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS, Jefferson Avenue and Gamble Street.—Organized in 1869. Classes graduated in 1870 and in each subsequent year until 1873, when it suspended. It was reorganized in 1879. Classes graduated in 1880 and subsequent years. It has a faculty of 25 professors, 24 lecturers, instructors, etc., a total of 49. The course covers four years of seven months each. Total fees for each of the four years respectively are $105, $100, $100 and $105. The Dean is Dr. Waldo Briggs, 2600 Gamble Street. Total registration for 1908-9 was 224; graduates, 66. The next session begins Sept. 15, 1909, and ends May 6, 1910.

BARNES MEDICAL COLLEGE, Garrison and Lawton Avenues.—Organized in 1892. Classes graduated in 1893 and in all subsequent years, except 1899. The Secretary is Dr. C. M. Ament, 1025 Missouri Trust Building. Total registration for 1908-9 was 124; graduating class, 36.

AMERICAN MEDICAL COLLEGE, Eclectic, 407 South Jefferson Avenue.—Organized in 1873. Two classes graduated each year from

1874 to 1883, inclusive. Since then one class has graduated each year. The Dean is Dr. J. J. Link. The total registration for 1908-9 was 28; graduates, 7. The next session begins Sept. 1, 1909, and ends May 4, 1910.

HIPPOCRATEAN COLLEGE OF MEDICINE, 3412 Morgan Street. A night school.—Organized in 1907. Its faculty numbers 28. During 1908-9 it had 31 students. The Dean is Dr. Emory Lanphear. The next session begins Sept. 6, 1909, and ends June 15, 1910.

NEBRASKA

Nebraska, population 1,068,484, has three medical colleges: The University of Nebraska College of Medicine and the John A. Creighton Medical College at Omaha, population 124,167, and the Lincoln Medical College at Lincoln, population 48,232.

Lincoln and Omaha

COLLEGE OF MEDICINE, UNIVERSITY OF NEBRASKA, Eleventh and R Streets, Lincoln, and Twelfth and Pacific Streets, Omaha.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. Two years of collegiate work are required for admission. The first two years are given at Lincoln; the last two at Omaha. The faculty is composed of 38 professors and 46 lecturers and instructors, total 84. The fees are approximately $100 per annum. The total registration for 1908-9 was 122; graduates, 9. The next session begins Sept. 21, 1909, and ends May 19, 1910.

Lincoln

LINCOLN MEDICAL COLLEGE, Eclectic, Corner 13th and P Streets. It is the Medical Department of Cotner University.—Organized in 1890. The first class graduated in 1891. The faculty numbers 44. The course of study covers four years of thirty-two weeks each. The total fees for the first year are $80; second and third, $75 each, and $85 for the fourth year, or $250 for all four years together. The Secretary is Dr. R. H. Spradling, 1315 O Street. The total registration for 1908-9 was 42; graduates, 9. The twentieth session begins Sept. 9, 1909, and ends June 9, 1910.

Omaha

JOHN A. CREIGHTON MEDICAL COLLEGE, Fourteenth and Davenport Streets. It is the Medical Department of Creighton University.—Organized in 1892. The first class graduated in 1895. It has a faculty of 35 professors and 16 associates, lecturers and assistants, a total of 51. Beginning in September, 1910, two years of work in a college of liberal arts will be required for admission. The course of study embraces four years of eight months each. The total fees for the four years respectively are $100, $100, $100 and $105. The Dean is Dr. D. C. Bryant, McCague Building. Total number of students registered in 1908-9 was 177; graduates, 30. The eighteenth session begins Sept. 1, 1909, and ends May 2, 1910.

NEW HAMPSHIRE

New Hampshire, population 432,624, has one medical college, located at Hanover, population 1,797.

Hanover

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is the Medical Department of Dartmouth College. The faculty is made up of 17 professors and 6 instructors, a total of 23. Beginning with the session of 1910-11 two years of collegiate work will be required for admission. The course covers four years of eight months each. The fees are $100 each year. The Dean is Dr. William T. Smith. The total registration for 1908-9 was 58; graduates, 14. The work of the first and second years begins with that of the academic department Sept. 24, 1909, and ends June 30, 1910; for the advanced classes the course begins Aug. 4, 1909, and ends March 26, 1910.

NEW YORK

New York State, population 8,226,990, has eleven medical colleges. Eight of these, College of Physicians and Surgeons (Columbia University), Long Island College Hospital, New York Homeopathic Medical College and Hospital, New York Medical College and Hospital for Women, Eclectic Medical College of the City of New York, Cornell University Medical College, the University and Bellevue Hospital Medical College, and Fordham University School of Medicine, are located in New York City, population 4,113,043. Albany Medical College is located in Albany, a city of 98,537 people. The University of Buffalo Medical Department is situated in Buffalo, population of 381,819. The College of Medicine, Syracuse University, is in Syracuse, a city of 118,880 inhabitants.

Albany

ALBANY MEDICAL COLLEGE, Lancaster and Jay Streets.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. The faculty is composed of 17 professors and 48 lecturers, assistants, etc., a total of 65. The curriculum covers four years of eight months each. Fees: First year, $130; second year, $145; third year, $120, and fourth year, $130. The Registrar is Dr. Willis G. Tucker. The total registration for 1908-9 was 180; graduates, 37. The seventy-ninth session begins Sept. 21, 1909, and ends May 17, 1910.

Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 38 professors and 59 lecturers, assistants, etc., a total of 97. The course covers four years of eight months each. The total fees for the four years respectively are $185, $180, $140 and $140. The Dean is Dr. Matthew D. Mann, 37 Allen Street. Total registration for 1908-9 was 185; graduates, 34. The sixty-fourth session begins Sept. 27, 1909, and ends May 27, 1910.

New York

COLLEGE OF PHYSICIANS AND SURGEONS IN THE CITY OF NEW YORK, 437 West Fifty-ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. Affiliated with Columbia College in 1814 and was permanently connected in 1860, when it became the Medical Department of Columbia College. That institution became Columbia University in 1891. The faculty is composed of 48 professors and 115 instructors, demonstrators, etc., a total of 163. Beginning in 1910 the entrance requirements will be two years of collegiate work including courses in physics, chemistry and biology. The work covers four years of eight months each. The Dean is Dr. Samuel W. Lambert. The total fees for the first year are $255; for the second and third, $250, and $275 for the fourth year. Total registration for 1908-9 was 312; graduates, 82. The 102d session begins Sept. 22, 1909, and ends June 1, 1910.

CORNELL UNIVERSITY MEDICAL COLLEGE, Ithaca, and First Avenue and Twenty-eighth Street, New York.—Organized in 1898. The first class was graduated in 1899. The work of the first two years may be taken either in Ithaca or New York. The faculty is composed of 54 professors and 113 assistants, lecturers, instructors, etc., a total of 167. All candidates for admission must be graduates of approved colleges or scientific schools and in addition must have such knowledge of physics and inorganic chemistry as may be obtained in college by a year's course in these subjects when accompanied by laboratory work; in and after 1910 a similar knowledge of biology will be required. Fees: First year, $190; second and third, $185 each, and $200 for the fourth year. The Dean is Dr. William M. Polk. Total registration for 1908-9 was 217; graduates, 54. The twelfth session begins Sept. 29, 1909, and ends June 15, 1910.

ECLECTIC MEDICAL COLLEGE OF THE CITY OF NEW YORK, 239 East Fourteenth Street.—Organized in 1865. The first class graduated in 1867. The Dean is Dr. George W. Boskowitz. Total registration for 1908-9 was 96; graduates, 9.

FORDHAM UNIVERSITY SCHOOL OF MEDICINE, Third and Pelham Avenues.—Organized in 1905. First class graduated in 1909. The faculty consists of 43 professors and 30 lecturers and assistants, a total of 73. The course of instruction covers four years of eight months each. Fees: First year, $195; second and third years, $190 each; fourth year, $180. A year's work in a recognized college of liberal arts is required for admission. The Dean is Dr. James J. Walsh. The total registration for 1908-9 was 43; graduates, 1. The fifth session begins Sept. 30, 1909, and ends May 23, 1910.

LONG ISLAND COLLEGE HOSPITAL, Henry Street, near Atlantic Avenue, Brooklyn.—Organized in 1858. The first class graduated in 1860. It has a faculty of 9 professors and 98 assistants, instructors, etc., a total of 107. The course covers four years of thirty weeks each. Fees: First year, $200; second, $200; third, $160, and $195 for the fourth year. The Secretary is Dr. Joseph H. Raymond. Total registration, 1908-9, was 364; graduates, 75. The fifty-second session begins Sept. 29, 1909, and ends June 1, 1910.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND HOSPITAL, Eastern Boulevard, between Sixty-third and Sixty-fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College for the State of New York. The present title was assumed in 1869. The first class graduated in 1861. The Dean is Dr. Royal S. Copeland. Total registration for 1908-9 was 109; graduates, 16.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN, 17-19 West One Hundred and First Street.—Organized in 1863. The first class graduated in 1864. The Dean is Dr. Helen Cooley Palmer. The total registration for 1908-9 was 24; graduates, 4.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, First Avenue and Twenty-sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. The faculty is composed of 33 professors and 90 instructors, etc., in all 123. The course covers four years of eight months each. The fees are $200 per year. The Dean is Dr. Egbert Le Fevre. Total registration for 1908-9 was 445; graduates, 74. The twelfth session begins Sept. 29, 1909, and ends June 1, 1910.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street.—Organized in 1872 as the College of Physicians and Surgeons of Syracuse University. The present title was assumed in 1875. In 1872 Geneva Medical College was merged with it. The first class was graduated in 1873. The faculty is composed of 15 professors and 42 assistant professors, lecturers and instructors, in all 57. The course covers four years of eight months each. The completion of one year in an accredited college of liberal arts is required for admission. Beginning September 1910 two years of such college work will be required for admission. The average total fees for each year are $172.25. The Dean is Dr. John L. Heffron. The total registration for 1908-9 was 149; graduates, 33. The thirty-eighth session begins Oct. 5, 1909, and ends June 8, 1910.

NORTH CAROLINA

North Carolina, population, 2,059,326, has four medical schools, one of which gives only the first two years of the medical course. The Medical Department of the University of North Carolina is located at Chapel Hill, population 1,100, and at Raleigh, population 14,225. The Leonard School of Medicine is at Raleigh. The North Carolina Medical College is at Charlotte, population 22,009. Wake Forest School of Medicine is at Wake Forest, population 823.

Chapel Hill and Raleigh

UNIVERSITY OF NORTH CAROLINA MEDICAL DEPARTMENT.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. The faculty is composed of 22 professors and 23 lecturers, assistants, etc., a total of 45. The total fees for the four years respectively are $114, $116, $75 and $80. The Dean of the Department at Chapel Hill is Dr. G. H. Manning; at Raleigh, Dr. H. A. Royster. The total registration for 1908-9 was 113; graduates, 12. The twentieth session begins Sept. 6, 1909, and ends June 1, 1910.

Charlotte

NORTH CAROLINA MEDICAL COLLEGE. Church and Sixth Streets.—Organized in 1887 at Davidson as the Davidson School of Medicine. It was a preparatory school only, not granting any degrees until 1893, when it was chartered under its present name. The first class was graduated in 1893. Removed to Charlotte in 1907. The faculty numbers 29. The course covers four years of eight months each. Fees: First three years, $85 each, and $100 for the fourth year. The Dean is Dr. Walter O. Nisbet. The total registration for 1908-9 was 94; graduates, 17. The next session begins Sept. 8, 1909, and ends April 30, 1910.

Raleigh

LEONARD MEDICAL SCHOOL.—Colored. This department of Shaw University was established in 1882. Classes were graduated in 1886, 1888 and in all subsequent years. It has a faculty of 10. The course covers four years of seven months each. The total fees for each year are $15; graduation fee, $10. The Dean is Dr. James McKee. Total registration for 1908-9 was 125; graduates, 22. The 28th session begins Sept. 30, 1909, and ends May 12, 1910.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty numbers 10. It only gives the first two years of the medical course, which constitute a part of the course for the B.S. degree. Each annual course extends over nine months. The fees are $100 each year. The Dean is Dr. John Brewer Powers. The total registration for 1908-9 was 53. The eighth session begins Sept. 6, 1909, and ends May 25, 1910.

NORTH DAKOTA

North Dakota, population 383,226, has one medical college, the College of Medicine of the State University of North Dakota, which is situated at University near Grand Forks.

University

UNIVERSITY OF NORTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1905. The faculty is composed of 9 professors and 7 instructors, a total of 16. The course consists of two years' academic work and two years of medical college subjects, occupying nine months each year. The total fees for each of the medical years are $50. The Dean is M. A. Brannon, A.M. The total registration for 1908-9 was 22. The fifth session begins Sept. 21, 1909, and ends June 16, 1910.

OHIO

Ohio, population 4,448,677, has eight medical colleges. Three of these, the Ohio-Miami Medical College of the University of Cincinnati, the Eclectic Medical Institute, and Pulte Medical College, are located in Cincinnati, a city of 345,230 inhabitants. Cleveland, population 460,327, contains three medical schools: Western Reserve University Medical College, Cleveland College of Physicians and Surgeons and the Cleveland Homeopathic Medical College. Columbus, population 145,414, contains one medical college, the Starling-Ohio Medical College. Toledo, with 159,980 people, has one medical school, the Toledo Medical College.

Cincinnati

THE OHIO-MIAMI MEDICAL COLLEGE OF THE UNIVERSITY OF CINCINNATI.—Organized in 1909 by the union of the Ohio Medical College (founded in 1819) with the Miami Medical College (founded in 1852). The Ohio Medical College became the Medical Department of the University of Cincinnati, April 26, 1896. Under a similar agreement, March 2, 1909, Miami Medical College also merged into the University when the present title was taken. The agreement gave the university entire control and both colleges turned over all their property to the City of Cincinnati for the University and gave up their own corporate existence. The faculty now consists of 50 professors, 13 associate and assistant professors, and 65 lecturers, instructors, etc., a total of 128. The course covers four years of eight months each. The fees are a tuition fee of $125 a year; a matriculation fee of $5, payable but once, and a graduation fee of $25. The Secretary is Dr. E. Otis Smith. The next session begins Sept. 27, 1909, and ends June 4, 1910.

ECLECTIC MEDICAL INSTITUTE, 1009 Plum Street.—Organized in 1832 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered under its present title. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, merged into it. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843 inclusive. It has a faculty of 19 professors and 6 lecturers and assistants, a total of 25. The course covers four years of thirty weeks each. The fees are $90 for each year. The Dean is Dr. Rolla L. Thomas, 792 East McMillan Street. Total registration for 1908-9 was 81; graduates, 16. The next session begins Sept. 20, 1909, and ends May 4, 1910.

PULTE MEDICAL COLLEGE. Homeopathic. Mound and Seventh Streets.—Organized in 1872. The first class graduated in 1873. The faculty numbers 37. The fees for each of the four years are respectively $85, $82, $75 and $100. The Dean is Dr. Charles E. Walton. Total enrolment for 1908-9 was 16; graduates, 3. The 38th session begins Sept. 30, 1909, and ends May 25, 1910.

Cleveland

THE CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS. Central Avenue and East Fourteenth Street.—Organized in 1863 as Charity Hospital Medical College, became the Medical Department of Wooster University in 1869 and the Medical Department of the Ohio Wesleyan University in 1896, when it assumed its present title. Classes were graduated in 1865 and in all subsequent years except 1881. The faculty is composed of 33 professors, 28 lecturers, assistants, etc., 61 in all. The total fees for the four years respectively are $130, $130, $117 and $110. The curriculum covers four years of eight months each. The Dean is Dr. R. E. Skeel, 314 The Osborn. Total registration for 1908-9 was 92; graduates, 16. The next session begins Oct. 1, 1909, and ends June 1, 1910.

CLEVELAND HOMEOPATHIC MEDICAL COLLEGE. Prospect Avenue and Huron Road.—Organized in 1849 as the Western College of Homeopathic Medicine. The first class graduated in 1853. In 1857 it became the Western Homeopathic College and in 1870 it became the Homeopathic Hospital College when the Homeopathic Medical College for Women, organized in 1868, merged into it. In 1894 it became the Cleveland University of Medicine and Surgery, which in 1898 merged with the Cleveland Medical College, organized in 1890, taking the present title. The Dean is Dr. George H. Quay. Total number of students registered in 1908-9 was 41; graduates, 13.

WESTERN RESERVE UNIVERSITY, MEDICAL DEPARTMENT, St. Clair Avenue and East Ninth Street.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1845. It assumed the present title in 1881. The faculty includes 24 professors and 74 lecturers, assistants, etc., a total of 98. The curriculum embraces four years of eight and one-half months each. Three years of college work are required for admission to first year of medical course. The total fees are $125 for each year. The Dean is Dr. B. L. Millikin, 1110 Euclid Avenue. The total registration for 1908-9 was 98; graduates, 25. The 67th session begins Oct. 1, 1909, and ends June 16, 1910.

Columbus

STARLING-OHIO MEDICAL COLLEGE. Buttles Avenue and Park Street.—Organized in 1907 by the union of Starling Medical College (organized 1834) with the Ohio Medical University (organized 1890). The faculty consists of 35 professors and 22 lecturers, demonstrators, etc., a total of 57. The course covers four years of eight months each. Total fees for the four years respectively are $115, $110, $105 and $125. The Dean is Dr. George M. Waters. The total registration for 1908-9 was 231; graduates, 50. The next session begins Sept. 22, 1909, and ends May 17, 1910.

Toledo

TOLEDO MEDICAL COLLEGE. Cherry and Page Streets.—Organized in 1883. The first class graduated in 1883. The faculty numbers 50. The curriculum embraces four years of eight months each. The fees are $100 for each year, with a matriculation fee of $5, payable once. The Dean is Dr. James Donnelly. The total registration for 1908-9 was 38; graduates, 5. The next session begins Oct. 1, 1909, and ends May 26, 1910.

OKLAHOMA

Oklahoma, population 1,109,435, has two medical schools, the School of Medicine of the University of Oklahoma, which is located at Norman, a city of 3,800 inhabitants, and the Epworth College of Medicine, located at Oklahoma City, which has a population of 20,990.

Norman

STATE UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1898. Gives only the first two years of the medical course and does not grant degrees. The session extends over a period of nine months. The faculty numbers 9. Students are advised to take two or more years of collegiate premedical studies. The two years of the medical course may be used as the junior and senior years in the college of arts and sciences leading to degree of B.A. or B.S. The Dean is Dr. C. S. Bobo. The total registration for 1908-9 was 10. The next session begins Sept. 14, 1909, and ends June 9, 1910.

Oklahoma City

EPWORTH COLLEGE OF MEDICINE.—Organized in 1904. The first class graduated in 1907. The faculty numbers 43. The course of study covers four years of seven and a half months each. The total fees are $100 each year. The Dean is Dr. A. K. West. The registration for 1908-9 was 51; graduates, 6. The sixth session begins Oct. 1, 1909, and ends May 9, 1910.

OREGON

Oregon, population 474,738, has two medical colleges: The Medical Department of Willamette University, located in Salem, a city of 7,287 people, and the University of Oregon Medical Department, in Portland, a city of 109,884 population.

Portland

UNIVERSITY OF OREGON, MEDICAL DEPARTMENT. Lovejoy and Twenty-third Streets.—Organized in 1887. The first class graduated in 1888. It has a faculty of 14 professors and 27 lecturers, assistants, etc., a total of 41. The course is four years of seven and one-half months each. Fees: First year, $142.50; second, $137.50; third, $107.50, and for the fourth, $57.50. The Dean is Dr. Simeon E. Josephi. The total registration for 1908-9 was 74; graduates, 15. The 23d session begins Sept. 13, 1909, and ends May 2, 1910.

Salem

MEDICAL DEPARTMENT WILLAMETTE UNIVERSITY.—Organized in 1865 at Salem. Classes were graduated in 1867 and in all subsequent years except 1896. It moved to Portland in 1878, but returned to Salem in 1895. The Dean is Dr. W. H. Byrd. The total registration for the college year 1908-9 was 29; graduates, 8. The next session begins Oct. 5, 1909, and ends May 29, 1910.

PENNSYLVANIA

Pennsylvania, population 6,928,515, has seven medical colleges. Of these Philadelphia, having a population of 1,441,735, contains six, as follows: University of Pennsylvania, Department of Medicine, Jefferson Medical College, Hahnemann Medical College, Woman's Medical College of Pennsylvania, Medico-Chirurgical College of Philadelphia and Temple University Department of Medicine. The other school, the Western Pennsylvania Medical College, is situated in Pittsburgh, a city of 375,082 people.

Philadelphia

UNIVERSITY OF PENNSYLVANIA, DEPARTMENT OF MEDICINE. Thirty-sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-79 inclusive. The original title was the Department of Medicine, College of Philadelphia, which was changed to the present title in 1791. It granted the first medical diploma issued in America. The faculty is made up of 27 professors, 3 associate professors, 4 adjunct professors, 11 assistant professors, 111 demonstrators, lecturers, associates, instructors, etc., a total of 156. The requirements for admission for the session of 1909-10 will be the equivalent of work prescribed for freshmen in recognized colleges, which work must include a knowledge of physics, chemistry and general biology or zoology with laboratory work as specified by the College Entrance Examining Board and, in addition, two foreign languages, one of which must be French or German. The course embraces study of four years of nine months each. The total fees for each year are $200, with a matriculation fee of $5 for the first year. The Dean is Dr. Charles H. Frazier. Total registration for 1908-9 was 544; graduates, 110. The next session begins Sept. 24, 1909, and ends June 15, 1910.

JEFFERSON MEDICAL COLLEGE. Tenth and Walnut Streets.—Organized 1825 as the Medical Department of Jefferson College, Cannonsburg. The first class graduated in 1826. The present title was assumed in 1838. It has a faculty of 22 professors and 98 lecturers, demonstrators, etc., a total of 120. The course of study covers graded work of four years of eight months each. An optional fifth year is offered. The tuition is $180 a year, with a matriculation fee of $5, paid but once. The Dean is Dr. James W. Holland. The total registration for 1908-9 was 591; graduates, 139. The 85th session begins Sept. 24, 1909, and ends June 6, 1910.

MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA. Cherry Street, between Seventeenth and Eighteenth Streets.—Organized in 1881. The first class graduated in 1882. The faculty is composed of 31 professors and 64 lecturers, assistants, etc., a total of 95. The work embraces four years of eight months each. An optional preliminary year devoted to physics, chemistry and biology is offered. Fees, $150 per year; matriculation, $5, payable once. The Dean is Dr. Seneca Egbert. The total registration for the college year 1908-9 was 461; graduates, 56. The 29th session begins Sept. 24, 1909, and ends June 6, 1910.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA. Twenty-first and N. College Avenue.—Organized in 1850. Classes were graduated in 1851 and in all subsequent years except 1861 and 1862. It has a faculty of 10 professors and 47 assistants, lecturers, etc., in all 57. The curriculum covers four years of eight months each. Fees, $140 each year. The Dean is Dr. Clara Marshall. The total registration for 1908-9 was 125; graduates, 24. The 60th session begins Sept. 22, 1909, and ends June 1, 1910.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the present title. The first class graduated in 1849. It has a faculty of 27 professors and 46 lecturers, instructors, etc., in all 73. The work covers four years of eight months each. Fees: For each year, $150; matriculation, $5. The Dean is Dr. Herbert L. Northrop. The total registration for the college year 1908-9 was 187; graduates, 58. The 62d session begins Sept. 27, 1909, and ends June 1, 1910.

THE TEMPLE UNIVERSITY, DEPARTMENT OF MEDICINE. Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. The faculty numbers 75. It gives a four-year day course. The fees are $150 per year. The Dean is Dr. I. Newton Snively. The total registration for 1908-9 was 245; graduates, 18. The 9th session begins Sept. 15, 1909, and ends June 4, 1910.

Pittsburgh

UNIVERSITY OF PITTSBURGH, MEDICAL DEPARTMENT. Brereton Avenue and Thirtieth Street.—Organized in 1886 as the Western Pennsylvania Medical College. Became the Medical Department of the University of Pittsburgh in 1909. The first class graduated in 1887. The faculty is composed of 40 professors and 80 associates, assistants, etc., 120 in all. The course of study embraces four years of nine months each. The total fees are $150 for each year. The Dean is Dr. Thomas S. Arbuthnot. The total registration for 1908-9 was 378; graduates, 56. The 26th session begins Oct. 5, 1909, and ends June 15, 1910.

PHILLIPPINE ISLANDS

Manila

UNIVERSITY OF ST. THOMAS, MEDICAL DEPARTMENT.—The University was founded by a papal decree in 1587, and the medical school was added in 1771. The faculty numbers 154. The course extends over a period of six years of nine months each. The first year is a preparatory one, devoted to the teaching of physics, chemistry and biology. The degree of licenciado is conferred at the conclusion of the fifth year, and the degree of doctorado at the end of the sixth year, during which only special work is done. This last year is optional, the degree of licenciado entitling the holder to all the rights and privileges of the medical practitioner. The degree is equivalent to the English M.B. The Rector of the university is Dr. Fr. Raymundo Vetasquez; the Secretary of the Medical Department is Lic. Blas C. Alcuaz.

PHILIPPINE MEDICAL COLLEGE.—Organized in 1907 under the support of the Philippine Commission. The faculty numbers 42. The course extends over five years of thirty-five weeks each. The requirements for admission conform to the standards in the United States and Great Britain. The Secretary is Dr. Harry T. Marshall. The total registration for 1908 was 52; graduates, 8. The third session began June 7, 1909, and will end Feb. 26, 1910.

SOUTH CAROLINA

South Carolina, population 1,453,318, has one medical college, situated in Charleston, a city of 56,317 people.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA.—Founded in 1823 as the Medical College of South Carolina. In 1832 it was chartered with the present title. Classes were graduated in 1825 and in all subsequent years except 1861 to 1865 inclusive. It has a faculty of 11 professors and 20 lecturers, instructors, etc., a total of 31. The course covers four years of seven months each. The total fees for each of the first two years are $100, and $75 each for the last two. The Dean is Dr. Robert Wilson. Total enrolment for 1908-9 was 213; graduates, 38. The 87th session begins Oct. 1, 1909, and ends May 4, 1910.

SOUTH DAKOTA

South Dakota, population 465,908, has one medical college, the University of South Dakota, College of Medicine, located at Vermilion, a city of 2,183 people.

Vermilion

UNIVERSITY OF SOUTH DAKOTA, COLLEGE OF MEDICINE.—Organized in 1907. Offers only the first two years of the medical course. Two years of work in a college of liberal arts is required for admission. The faculty numbers 8. The Dean is Christian P. Lommen, B. S. The total registration for 1908-9 was 11. The third session begins Sept. 13, 1909, and ends June 9, 1910.

TENNESSEE

Tennessee, population 2,172,476, has nine medical colleges. Of these Vanderbilt University Medical Department, the Medical Department of the Universities of Nashville and Tennessee and Meharry Medical College are situated in Nashville, a city with a population of 84,703. Knoxville, population 36,051, contains two colleges, Tennessee Medical College and Knoxville Medical College. Chattanooga Medical College is situated in Chattanooga, a city of 34,297 people. Memphis Hospital Medical College, the College of Physicians and Surgeons and the University of West Tennessee are located in Memphis, population 125,235.

Chattanooga

CHATTANOOGA MEDICAL COLLEGE.—McCallie and Baldwin Streets. Organized in 1889. The first class graduated in 1890. It is the Medical Department of the University of Chattanooga. The faculty consists of 11 professors and 13 instructors, demonstrators, etc., total 24. The course covers four years of seven months each. The total fees approximate $75 each session. The Dean is Dr. J. R. Rathmell. The total registration for 1908-9 was 112; graduates, 24. The twenty-first session begins Sept. 22, 1909, and ends May 2, 1910.

Knoxville

TENNESSEE MEDICAL COLLEGE, MEDICAL DEPARTMENT OF LINCOLN MEMORIAL UNIVERSITY. Cleveland Street and Dameron Avenue.—Organized in 1889. The first class graduated in 1890. It has a faculty of 20 professors and 7 assistants, a total of 27. The curriculum covers four years of seven months each. Fees: First and second years, $50; third and fourth years, $60; matriculation fee, $5; graduation fee, $25. The Registrar is Dr. E. R. Zemp. The total registration for 1908-9 was 84; graduates, 13. The 20th session begins Oct. 1, 1909, and ends May 1, 1910.

KNOXVILLE MEDICAL COLLEGE. Colored. Clinton and McGhee Streets. Organized in 1900. Classes were graduated in 1900 and in all subsequent years except 1906 and 1907. The Secretary is Dr. H. M. Green, Famous Building. There were 23 students and 7 graduates for the session of 1908-9.

Memphis

COLLEGE OF PHYSICIANS AND SURGEONS. Opposite City Hospital. Organized in 1906. The first class graduated in 1907. It has a faculty of 45. The course covers four years of seven months each. The Dean is Dr. Heber Jones. The total registration for 1908-9 was 84; graduates, 11. The 4th session begins Sept. 15, 1909, and ends May 1, 1910.

MEMPHIS HOSPITAL MEDICAL COLLEGE. Marshall Avenue and Myrtle Street.—Organized in 1880. The first class graduated in 1881. It has a faculty of 11 professors and 23 lecturers, instructors, etc., a total of 34. The course covers four years of seven months each. The total fees for the first three years are

$75; for the fourth $100. The Dean is Dr. W. B. Rogers. Total registration for 1908-9 was 442; graduates, 98. The 30th annual session will begin Oct. 1, 1909 and close May 1, 1910.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF WEST TENNESSEE, Colored, 1190 South Phillips Place.—Organized in 1900. It has a faculty of 18. The course is four years of seven months each. The fees are $40 per year; graduation $10 extra. The Dean is Dr. M. V. Lynk. Registration for 1908-9 was 25; graduates, 8. The next session begins Sept. 14, 1909, and ends April 14, 1910.

Nashville

VANDERBILT UNIVERSITY, MEDICAL DEPARTMENT. Elm Street and Fifth Avenue.—This school was founded in 1874. The first class graduated in 1875. The present faculty of 39 consists of 19 professors and 20 lecturers. The course covers four years of seven and a half months each. The total fees for each of the first three years are $130 and for the fourth year $155. The Dean is Dr. William L. Dudley. The total registration for 1908-9 was 209; graduates, 49. The 36th session begins Sept. 16, 1909, and ends May 2, 1910.

UNIVERSITIES OF NASHVILLE AND TENNESSEE, MEDICAL DEPARTMENT.—Organized in 1909 by the union of the University of Nashville, Medical Department (founded in 1850) with the University of Tennessee, Department of Medicine (founded in 1876). The new college has a faculty of 50. The course will cover four years of thirty-two weeks each. The total fees will be $125 for each of the first three years and $150 for the fourth year. The Dean is Dr. R. O. Tucker. The total registration of the two schools for 1908-9 was 347; graduates, 102. The first session of the new school will begin Sept. 8, 1909, and will end May 2, 1910.

MEHARRY MEDICAL COLLEGE. Colored. Maple and Chestnut Streets.—This school was organized in 1876 and is the Medical Department of Walden University. The faculty is made up of 12 professors and 14 instructors, demonstrators, etc., 26 in all. The work embraces four years of seven months each. The total fees are for the first year, $53; second and third years, $55 each, and $60 for the fourth year. The Dean is Dr. G. W. Hubbard. Total registration for 1908-9 was 275; graduates, 58. The 34th session begins Sept. 15, 1909, and ends April 14, 1910.

TEXAS

Texas, population 3,536,618, has four medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 34,355 inhabitants. The Medical Department of Fort Worth University is at Fort Worth, population 27,096. The Baylor University College of Medicine and the Medical Department of Southwestern University are situated in Dallas, population 52,793.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 435-37 South Ervay Street.—Organized in 1900 as the University of Dallas, Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University at Waco. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The Dean is Dr. E. H. Cary. Total registration for 1908-9 was 53; graduates, 16. The 10th session begins Oct. 1, 1909, and ends May 1, 1910.

SOUTHWESTERN UNIVERSITY MEDICAL COLLEGE.—Organized in 1903. The first class graduated in 1904. It has a faculty of 17 professors and 15 instructors, total 32. The course of instruction covers four years. The fees for the four years respectively are $110, $105, $100 and $125. The Dean is Dr. John O. McReynolds. Total registration for 1908-9 was 68; graduates, 9. The 7th session begins Sept. 29, 190[illegible] and ends April 29, 1910.

Fort Worth

MEDICAL DEPARTMENT OF FORT WORTH UNIVERSITY. Calhoun and Fifth Streets.—Organized in 1894. The first class graduated in 1895. It has a faculty of 16 professors and 22 lecturers, assistants, etc., in all 38. The course covers four years of seven months each. The total fees for each of the first three years are $105 and $130 for the fourth year. The Dean is Dr. W. R. Thompson. The total registration for the college year 1908-9 was 100; graduates, 19. The sixteenth session begins Sept. 27, 1909, and ends May 13, 1910.

Galveston

UNIVERSITY OF TEXAS, DEPARTMENT OF MEDICINE. Avenue B and Ninth Street.—Organized in 1891. The first class graduated in 1892. It has a faculty of 10 professors and 15 lecturers. The curriculum embraces four years of eight months each. The total fees for the four years respectively are $55, $30, $20 and $5. The Dean is Dr. William S. Carter. Total registration for 1908-9 was 211; graduates, 37. The 19th session begins Oct. 1, 1909, and ends May 31, 1910.

UTAH

Utah, population 316,331, has one medical college, the Medical Department of the University of Utah, situated at Salt Lake City, which has 61,202 people.

Salt Lake City

UNIVERSITY OF UTAH, DEPARTMENT OF MEDICINE.—Organized in 1906. Gives only the first two years of the medical course. Each course covers thirty-six weeks. One year of collegiate work is required for admission. In 1910 and thereafter the requirement will be two years of collegiate work. The medical faculty consists of 6 professors and 15 lecturers and assistants, a total of 21. The fees are $65 each year. The Dean is Byron Cummings, A.M. Total registration for 1908-9 was 18. The third session begins Sept. 16, 1909, and ends June 1, 1910.

VERMONT

Vermont, population 350,373, has one medical school, located at Burlington, a town of 21,070 people.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE. Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty numbers 46. The course of study covers four years of seven months each. The total fees for each of the first three years are $115 and $140 for the fourth year. The Dean is Dr. H. C. Tinkham; Secretary, Dr. James N. Jenne. The total registration for the college year 1908-9 was 166; graduates, 33. The next session begins Nov. 11, 1909, and ends June 24, 1910.

VIRGINIA

Virginia, population 1,973,104, has three medical colleges, one, the Medical Department of the University of Virginia, situated in Charlottesville, population 6,449, and two, the Medical College of Virginia and the University College of Medicine, in Richmond, population 87,246.

Charlottesville

UNIVERSITY OF VIRGINIA, DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years, except 1865. It has a faculty of 17 professors and 15 lecturers, instructors, assistants, etc., a total of 32. The requirements for admission are the completion of a three years' high school course, or its equivalent, and a year of college work devoted to chemistry, physics and biology. Fees: First year, $150; second year, $140; third year, $120; fourth year, $100. The Dean is Dr. R. H. Whitehead. The total registration for 1908-9 was 88; graduates, 18. The next session begins Sept. 16, 1909, and ends June 15, 1910.

Richmond

MEDICAL COLLEGE OF VIRGINIA. Marshall and College Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 16 professors and 32 lecturers, instructors, etc., a total of 48. The requirement for admission is a full four-year high school education. The course embraces four years of eight months each. Fees, $100 each year; graduation fee, $30. The Dean is Dr. Christopher Tompkins. The total registration for the college year 1908-9 was 206; graduates, 35. The 72d session begins Sept. 14, 1909, and ends May 18, 1910.

UNIVERSITY COLLEGE OF MEDICINE. Eleventh and Clay Streets.—Organized in 1893. The first class graduated in 1894. It has a faculty of 23 professors, 52 lecturers, assistants, etc., a total of 75. The curriculum covers four years of eight months each. The total fees are $100 for each year. The President is Dr. Stuart McGuire; the Dean is Dr. A. L. Gray. The total registration for the college year 1908-9 was 140; graduates, 42. The seventeenth session begins Sept. 14, 1909, and ends May 17, 1910.

WEST VIRGINIA

West Virginia, population 1,076,406, has one medical college, College of Medicine of the West Virginia University, located at Morgantown, a city of 3,900 inhabitants.

Morgantown

WEST VIRGINIA UNIVERSITY COLLEGE OF MEDICINE.—Organized in 1902. Gives only the first two years of the medical course. Each college term extends over nine months. The faculty consists of 8 professors and 5 assistants, 13 in all. Tuition to students residing in the state, $25; for others, $50 per year. The Dean is Dr. J. N. Simpson. The total registration for the college year 1908-9 was 40. The eighth session begins Sept. 20, 1909, and ends June 15, 1910.

WISCONSIN

Wisconsin, population 2,260,930, has three medical colleges, the Medical Department of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city having a population of 25,128, and the Milwaukee Medical College and Wisconsin College of Physicians and Surgeons, situated in Milwaukee, a city of 317,903 people.

Madison

UNIVERSITY OF WISCONSIN COLLEGE OF MEDICINE.—Organized in 1907. Gives only the first two years of the medical course. For matriculation a candidate must have had in addition to a four-year high school course at least two years in a college of arts and science or an equivalent training. Two years of Latin, a reading knowledge of French and German, and at least a year's work in physics, chemistry and biology are specifically required. It has a faculty of 25 professors and 20 lecturers, instructors, etc., a total of 45. The Dean is Dr. Charles R. Bardeen. The registration for 1908-9 was 32. The 2d session begins Sept. 27, 1909, and ends June 22, 1910.

Milwaukee

MILWAUKEE MEDICAL COLLEGE. MEDICAL DEPARTMENT OF MARQUETTE UNIVERSITY. Ninth and Wells Streets.—Organized in 1894. The first class graduated in 1895. It became the Medical Depart-

ment of Marquette University in 1907. It has a faculty of 30 professors and 36 lecturers, instructors, etc., a total of 66. The course covers four years of eight months each. The total fees are $135 each for the first three years and $150 for the fourth year. The Dean is Dr. Warren B. Hill. The total registration for 1908-9 was 166; graduates, 23. The 16th session begins Oct. 5, 1909, and ends May 23, 1910.

WISCONSIN COLLEGE OF PHYSICIANS AND SURGEONS. Fourth Street and Reservoir Avenue.—Organized in 1893. The first class graduated in 1894. It has a faculty of 25 professors and 28 lecturers, instructors, etc., a total of 53. The curriculum includes four years of eight months each. Fees: Matriculation, paid once, $5; general ticket, $125. The Dean is Dr. Thomas C. Phillips. The total registration for 1908-9 was 60; graduates, 15. The 18th session begins Oct. 1, 1909, and ends May 27, 1910.

CANADA

Manitoba

MANITOBA MEDICAL COLLEGE, Winnipeg.—It is the Medical Faculty of the University of Manitoba. Organized 1883, first class graduated 1886 and a class graduated each subsequent year. The faculty numbers 40. The fees are $130 for the first year and $125 for each of the other four years. The entire course covers five years. The dean is Dr. H. H. Chown, 263 Broadway, Winnipeg. Total registration for 1908-9 was 115; graduates, 36. The next session begins Sept. 27, 1909, and ends May 1, 1910.

Nova Scotia

HALIFAX MEDICAL COLLEGE, Medical Faculty of Dalhousie University, Halifax.—Organized 1867 as Halifax School of Medicine, united same year with Dalhousie University, separately incorporated 1876, affiliated with Dalhousie University 1885, first class graduated 1872 and a class graduated each subsequent year except 1873 and 1886. The course covers four years. The Dean is Dr. George L. Sinclair. The Secretary is Dr. A. W. H. Lindsay. The total registration for 1908-9 was 61; graduates, 8. The next session begins Aug. 26, 1909, and ends April 28, 1910.

Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Organized 1843 as the Medical Faculty of King's College. Abolished in 1853. Re-established in 1887. The course of study covers five years of eight months each. In 1902 it absorbed Victoria University and in 1903 it absorbed Trinity Medical College. The Dean is Dr. A. R. Reeve; Secretary, Dr. A. Primrose. The total registration for 1908-9 was 630; graduates, 90. The next session begins Oct. 1, 1909, and ends May 13, 1910.

MEDICAL FACULTY OF QUEEN'S UNIVERSITY, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the University, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1897 the school again became an integral part of Queen's University. The fees amount to $100 each year; fee for the M.D., C.M. degrees, $30. A five year medical course is required. The total registration in 1908-9 was 208; graduates, 40. The Dean is Dr. A. R. B. Williamson. The next session begins Sept. 29, 1909, and ends April 27, 1910.

MEDICAL DEPARTMENT OF WESTERN UNIVERSITY, London.—Organized in 1881, first class graduated in 1883 and a class graduated each year subsequently. The Registrar is Dr. W. E. Waugh. Total registration for 1908-9 was 104; graduates, 27. The next session begins Sept. 21, 1909, and ends May 1, 1910.

Quebec

MEDICAL FACULTY OF MCGILL UNIVERSITY.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No sessions between 1836-39 owing to political troubles. In 1905 absorbed Faculty of Medicine University of Bishop College. The course now extends over five years. The faculty numbers 95. Total registration for 1908-9 was 328; graduates, 71. The Registrar is Dr. John W. Scane. The next session begins Oct. 1, 1909, and ends June 8, 1910.

LAVAL UNIVERSITY, MEDICAL DEPARTMENT, Quebec and Montreal.—The Quebec school of Medicine, organized in 1848, became in 1852 Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. Department organized in Montreal in 1878. The course extends over five years. The Deans are Dr. Laurent Catellier, Quebec, and Dr. E. P. Lachapelle, Montreal. Total registration at the two departments, 1908-9, was 309; graduates, 55. The next session begins Sept. 15, 1909, and ends June 20, 1910.

FOREIGN MEDICAL COLLEGES

ARGENTINE REPUBLIC

Buenos Ayres.—Universidad Nacional de Buenos Aires.
Cordova.—Universidad Nacional.

AUSTRALIA

Adelaide.—Universidad Nacional.
Melbourne.—University of Melbourne.
Sydney.—University of Sydney.

AUSTRIA

Gratz, Styria.—Kaiserliche Königliche Karl Franzens Universität.
Innsbruck, Tyrol.—Kais. König. Leopold Franzens Universität.
Krakow, Galicia.—Uniwersytet Jagiellonski w Krakowie.
Lemberg, Galicia.—C. K. Uniwersytet Imienia Cesarza Franciska I.
Prague, Bohemia.—K. K. Deutsche Karl-Ferdinand-Universität.
Prague, Bohemia.—C. K. Ceská Universita Karlo-Ferdinandova.
Vienna, Nether Austria.—Kaiserliche Königliche Universität.

BELGIUM

Brussels.—Université Libre de Bruxelles.
Ghent.—Université d l'Etat de Gand.
Liege.—Université de Liège.
Louvain.—Université Catholique.

BRAZIL

Bahia.—Faculdade de Medicina, Cirurgia e Pharmacia.
Rio de Janeiro.—Faculdade de Medicina, Cirurgia e Pharmacia.
Porto Allegre.—Faculdade Livre de Medicina e Pharmacia.

CANADA

Halifax, Nova Scotia.—Dalhousie University (including Halifax Medical College).
Kingston, Ontario.—Queen's University.
London, Ontario.—Western University.
Montreal, Quebec.—McGill University.
Montreal, Quebec.—Université Laval.
Quebec, Quebec.—Université Laval.
Toronto, Ontario.—University of Toronto.
Winnipeg, Manitoba.—University of Manitoba (Manitoba Medical College).

CHILE

Santiago.—Universidad de Chile.

CHINA

Hongkong.—Hongkong College of Medicine.
Pekin.—The Union Medical College.
Shanghai.—Woman's Medical School.

COLOMBIA

Bogota.—Universidad de Bogota.

CUBA

Havana.—Universidad de la Habana.

DENMARK

Copenhagen.—Kjobenhavns Universitet.

EGYPT

Cairo.—Kasr il Aini (School of Medicine).

ENGLAND

Birmingham.—University of Birmingham.
Bristol.—University of Bristol.
Cambridge.—University of Cambridge.
Durham.—Durham University (Durham College of Medicine).
Leeds.—University of Leeds.
Liverpool.—University of Liverpool.
London.—University of London (including the following Medical Schools: (*a*) St. Bartholomew's Hospital, (*b*) Charing Cross Hospital, (*c*) St. George's Hospital, (*d*) Guy's Hospital, (*e*) King's College, (*f*) London Hospital (*g*) St. Mary's Hospital, (*h*) Middlesex Hospital, (*i*) St. Thomas's Hospital, (*j*) University College (*k*) Westminster Hospital, and (*l*) London (Royal Free Hospital) School of Medicine for Women.
Manchester.—Victoria University (Owen's College, founded in 1851, was merged in Victoria University in 1903).
Oxford.—University of Oxford.
Sheffield.—University of Sheffield.

FRANCE

Faculties of Medicine (to the degree of doctor in medicine, including the five required examinations).
Bordeaux.—Université de Bordeaux.
Lille.—Université de Lille.
Lyons.—Université de Lyon.
Montpellier.—Université de Montpellier.
Nancy.—Université de Nancy.
Paris.—Université de Paris.
Toulouse.—Université de Toulouse.
Preparatory Schools of Medicine.—Graduates of the 16 following schools are allowed to take the first two examinations if they are presided over by some member of a medical faculty:
(*a*) *"Full Exercise,"* or complete course (covering the work of 16 trimesters).
Algiers (Africa).—Académie d'Alger.
Marseilles.—Université d'Aix-Marseille.
Nantes.—Ecole de Plein Exercice de Médicine et de Pharmacie (part of the University of Rennes).
Rennes.—Université de Rennes.
(*b*) *Reorganized Schools.*—(Completing the first 12 trimesters.)
Amiens.—Ecole Préparatoire de Médicine et de Pharmacie (part of the University of Lille).
Angers.—Ecole Préparatoire de Médicine et de Pharmacie (part of the University of Rennes).
Besancon.—Université de Besancon.
Caen.—Université de Caen.
Clermont.—Université de Clermont.
Dijon.—Université de Dijon.
Grenoble.—Université de Grenoble.
Limoges.—Ecole de Médicine et de Pharmacie (part of the University of Poitiers).
Poitiers.—Université de Poitiers.
Reims.—Ecole Préparatoire de Médicine et de Pharmacie (part of the University of Paris).
Rouen.—Ecole de Médicine et de Pharmacie (part of the University of Caen).
Tours.—Ecole Préparatoire de Médicine et de Pharmacie (part of the University of Poitiers).

GERMANY

Berlin, Prussia.—Königliche Friedrich-Wilhelm Universität.
Bonn, Prussia.—Rheinische Friedrich-Wilhelms-Universität.
Breslau, Prussia.—Königliche Universität.
Erlangen, Bavaria.—Königl. Friedrich-Alexanders Universität.
Freiberg, Baden.—Grossherzogliche Badische Albert-Ludwigs-Universität.
Giessen, Hesse.—Grossherzogliche Hessische Ludwigs-Universität.
Gottingen, Prussia.—Königliche Georg-August-Universität.
Greifswald, Prussia.—Königliche Universität.
Halle, Prussia.—Vereinigte Friedrichs-Universität Halle-Wittenberg.
Heidelberg, Baden.—Grossherzogliche Ruprecht-Karls-Universität.
Jena, Thuringia.—Grossherzogliche und Herzogliche Sächsische Gesamt-Universität.
Kiel, Prussia.—Königliche Christian-Albrechts-Universität.
Konigsberg, Prussia.—Königliche Albertus-Universität.
Leipzig, Saxony.—Universität.
Marburg, Prussia.—Universität.
Munich, Bavaria.—Königliche Bayr. Ludwig-Maximilians-Universität.
Rostock, Mecklenberg.—Universität.
Strassburg, Alsace-Lorraine.—Kaiser-Wilhelms-Universität.
Tübingen, Wurtemberg.—Königliche Eberhard-Karls-Universität.
Würzburg, Bavaria.—Königliche Julius-Maximilians Universität.

GREECE

Athens.—Τὸ ἐν Αθήναις ἐθνικὸν Πανεπιστήμιον. (National University.)

GUATEMALA

Guatemala.—Facultad de Medicina.

HUNGARY

Budapest.—Budapesti Királyi Magyar Tudomány-Egyetem (Royal Hungarian University).
Klausenburg.—Kolozsvári Magyar Királyi Ferencz-Jozsef Tudomány-Egyetem (Royal Hungarian Franz-Joseph University).

ICELAND

Reykjavik.—Loeknaskoli (School of Physicians).

INDIA

Bombay.—University of Bombay (Grant Medical College).
Calcutta.—University of Calcutta (Medical College of Bengal).
Lahore.—Panjab University (Lahore Medical College).
Madras.—University of Madras (Madras Medical College).

IRELAND

Dublin.—Royal University of Ireland (including Queen's College Belfast; Queen's College, Cork; Queen's College, Galway).
Dublin.—University of Dublin (The School of Physic in Ireland, Trinity College).
Dublin.—Catholic University Medical School.
Dublin.—Royal College of Surgeons, Schools of Surgery (including the Carmichael College of Medicine and the Ledwich School of Medicine).

ITALY

Bologna.—Regia Università degli Studi.
Cagliari, Sardinia.—Università degli Studi.
Camerino.—Libera Università degli Studi.
Catania.—Regia Università degli Studi di Catania.
Ferrara.—Libera Università degli Studi di Ferrara.
Florence.—Regia Instituto di Studi Superiori, Practici e di Perfezionamento.
Genoa.—Regia Università degli Studi.
Messina.—Regia Università degli Studi.
Modena.—Regia Università degli Studi.
Naples.—Regia Università degli Studi.
Padua.—Regia Università degli Studi.
Palermo.—Regia Università degli Studi.
Parma.—Regia Università degli Studi.
Paria.—Regia Università degli Studi.
Perugia.—Università Libra degli Studi.
Pisa.—Regia Università degli Studi.
Rome.—Regia Università degli Studi.
Sassari.—Regia Università degli Studi.
Siena.—Regia Università degli Studi.
Turin.—Regia Università degli Studi.

JAPAN

Kyoto.—Imperial University (part of medical school is located at Fukuoka).
Tokyo.—Imperial University (Tokio Medical College became Medical Department in 1877).
Medical schools are located also at Chiba, Sendai, Okayama, Kanazawa and Nagasaki.

MEXICO

Mexico.—Escuela de Medicina.

NETHERLANDS

Amsterdam.—Universiteit van Amsterdam.
Groningen.—Rijks-Universiteit te Groningen.
Leyden.—Rijks-Universiteit.
Utrecht.—Rijks-Universiteit.

NEW ZEALAND

Wellington.—University of New Zealand (affiliated with the University of Cambridge, England).

NORWAY

Christiania.—Kongelige Frederiks Universitet.

PERU

Lima.—Universidad Mayor de San Marcos.

PORTUGAL

Coimbra.—Universidade de Coimbra.
Lisbon.—Escola Medico-Cirurgica.

ROUMANIA

Bukharest.—Universitatea din Bucuresti.
Jassy.—Universitatea din Jasi.

RUSSIA

Helsingfors, Finland.—Kejserliga Alexanders Universitet.
Jurjev (formerly Dorpat).—Imperatorskij Jurjevskij Universitet.
Kazan.—Imperatorskij Kasanskij Universitet.
Kharkof.—Imperatorskij Charkovskij Universitet.
Kief.—Imperatorskij Universitet Sv. Vladimira.
Moscow.—Imperatorskij Moskovskij Universitet.
Odessa.—Imperatorskij Novorossijskij Universitet.
St. Petersburg.—Imperatorskij St. Petersbergskij Universitet: Including Vojenno-Medicinskaja Akademija (Military Medical Academy) and Zenskij Medicinskij Institut (Medical High School for Women).
Tomsk, Siberia.—Tomskij Universitet.
Warsaw.—Imperatorskij Varsavskij Universitet.

SCOTLAND

Aberdeen.—University of Aberdeen.
Dundee.—University of St. Andrews (University College).
Edinburgh.—University of Edinburgh.
Edinburgh.—School of Medicine of the Royal Colleges (including the Surgeons' Hall School).
Glasgow.—University of Glasgow (including Queen Margaret College).
Glasgow.—Anderson's College Medical School.
Glasgow.—St. Mungo's College and Glasgow Royal Infirmary.
Glasgow.—Western Medical School.

SPAIN

Barcelona.—Universidad de Barcelona.
Cadiz.—Facultad de Medicina.
Granada.—Universidad de Granada.
Madrid.—Universidad de Central de Espana.
Santiago.—Universidad.
Saragossa.—Universidad.
Seville.—Universidad de Sevilla. (To this university also belongs the Medical Faculty at Cadiz.)
Valencia.—Universidad Literaria.
Valladolid.—Universidad.

SWEDEN

Lund.—Kungl, Karolinska Universitetet.
Stockholm.—Karolinska Institutet (Medico-Chirurgical Institute). (This institute has the same chancellor as the universities at Lund and Upsala, and is guided by a similar constitution.)
Upsala.—Kungl, Universitetet i Upsala.

SWITZERLAND

Basel.—Universität.
Berne.—Kantonale Universität.
Geneva.—Université de Genève.
Lausanna.—Université.
Zurich.—Universität.

SYRIA

Bicrut.—Syrian Protestant College.
Beirut.—Université Saint Joseph de Beyrouth.

URUGUAY

Montevideo.—Universidad.

WALES

Cardiff.—University of Wales (Cardiff School of Medicine).

MEDICAL STANDARDS ABROAD

A list of medical colleges of all foreign countries shows a total of 165 such colleges outside the United States, while this country alone has 144. In other words, of the 309 medical colleges in all countries, the United States has 144, or 47 per cent., while the 30 other nations altogether have only 165, or 53 per cent. All European medical schools are medical faculties of universities or are under the direct control of universities, and there are no proprietary schools such as predominate in this country.

The information regarding preliminary education as well as collegiate and medical was obtained from original sources and from foreign publications. The data agree with the reports of the United States Bureau of Education, and in most instances have been confirmed by reports from the American consuls abroad.

The requirements in sixteen countries of Europe, Japan and three countries of South America are graphically presented in a chart, in which each division of education is shown according to the ages at which students are in attendance. The shaded portions of the bands represent primary and secondary educa-

tion, the black portions the medical, and the white portions represent the requirements of higher preliminary education, including work in physics, chemistry and biology. The chart allows valuable comparisons to be made and, as measured by years, shows more of a uniformity of educational standards than one would expect. It is interesting to note how sharply the line representing the age of 18 separates the secondary from higher education.

The age at the completion of the medical course in each country, as shown in the chart, with one or two exceptions, represents the lowest age at which the student can secure the right to practice medicine, disregarding the rare exceptions when the student graduates at an earlier age. The average age is one or two years higher than is shown in the chart, since the regular course of study between the ages of 6 and 24 is often broken by sickness, failure to receive promotion, or other causes.

In the majority of foreign countries secondary education begins from two to five years earlier than in this country and with a few exceptions has no direct connection with the elementary. In fact, in several European countries, in Great Britain and in France, for example, it appears that the majority of students entering the secondary schools secure their elementary instruction from private tutors or in preparatory courses offered by the secondary schools, rather than in the regular elementary schools.

It should be stated that, although the expression of educational requirements in terms of years, or months, or by the ages of students does not actually measure the value of the education obtained, nevertheless a knowledge of the minimum time requirements in other countries is of importance, and a comparison with the minimum time requirements in our own country is of much value. This chart is of peculiar interest. Educators of high repute have stated that the courses of study in the secondary schools of several European countries are the equivalent of a four-year high school course in this country, plus about two years of work in a college of liberal arts. It is, therefore, of some importance for us to know that the secondary schools of Europe may be completed at the age of 18, whereas two years of work in a college of arts in this country can rarely be completed before the age of 20. In other words, taking the above claims for granted, it is important for us to know that the training of 12 years, between the ages of 6 and 18, in Germany and other European countries, is the equivalent of 14 years' training in this country between the ages of 6 and 20.

Of all the countries named in the chart the United States is the only one which does not require preliminary work in physics, chemistry and biology of every medical student. In some of the countries named the work is taken in the first one or two years of the medical course, along with the usual medical studies, while in others, notably in France, Belgium and Sweden, it must be taken in a college of science or philosophy. In still others, as in Austria and in Great Britain, the work may be taken either in a college of liberal arts or in the medical school.

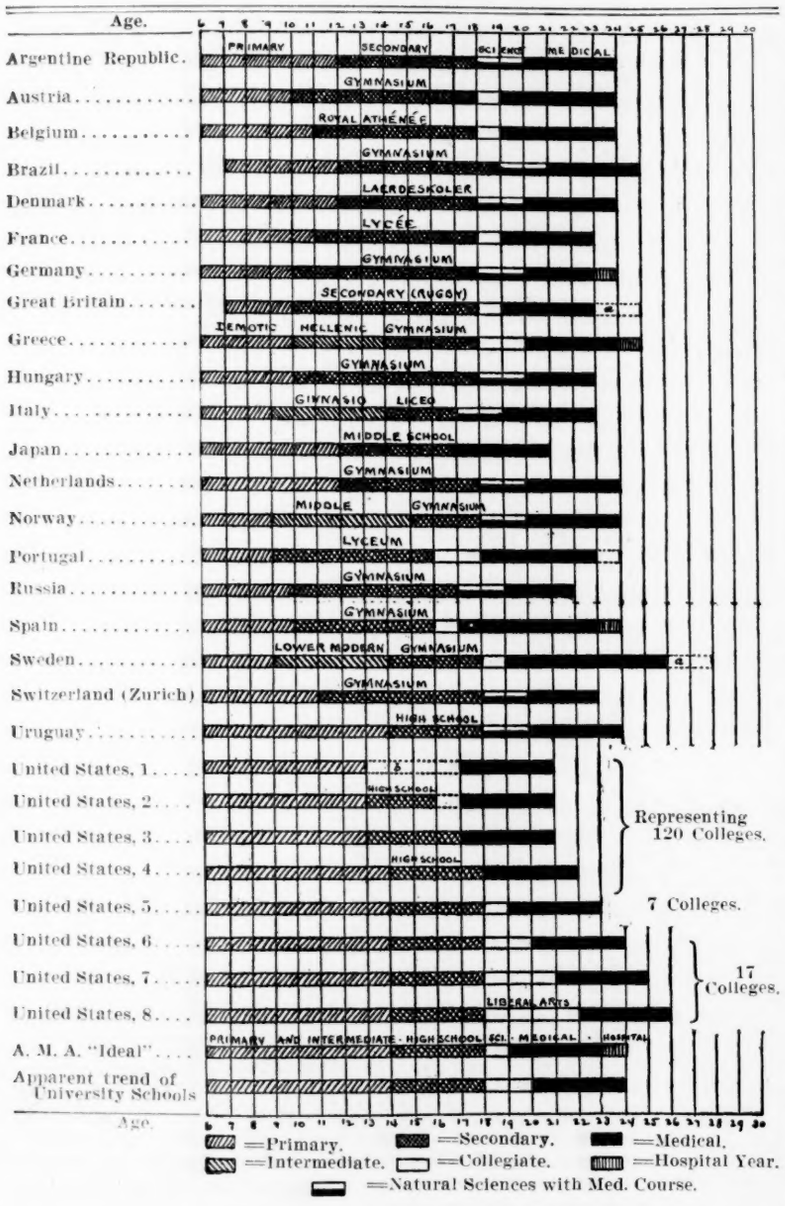
In France this work was given as a part of the regular medical course until in 1893, when it was transferred to the college of science, because the laboratories and trained instructors in those colleges made it certain that the courses would be thoroughly taught.

Only one year devoted to the preliminary scientific studies is required by all but two of the countries named or else the work extends through about two years along with regular medical subjects. In no instance is more than two years of college work devoted entirely to preliminary study.

In six of the countries named, disregarding rare exceptions, the earliest age at which the right to practice medicine can be secured, is 23. In three countries the age limit is 25 or beyond. But in the great majority the age limit is 24, and the entire course of elementary, secondary, college and medical education is completed in 18 years. This agrees with the "ideal standard" adopted at Portland, Ore., in 1905 by the American Medical Association, as well as with the combined course by which the students can secure the degrees of B.S. and M.D. in six years and which has been adopted by a number of colleges.

The well-known diversity of standards of medical education in the United States at the present time is also shown in the chart. Preliminary standards range from a common school education up to the requirement of a college degree. Of the 144 colleges in the United States, 121 require a four-year high school education or less, as shown in Groups 1 to 4, while 24 colleges are now requiring one or more years of work in a college of arts, 14 of these having raised their requirements in the past 3 years. There are now in the United States several medical schools which are probably equal to any found abroad.

PRELIMINARY AND MEDICAL EDUCATION AT HOME AND ABROAD



The educational standards in the countries regarding which definite information has been obtained are briefly stated as follows:

ARGENTINE REPUBLIC.—Elementary education extends between the ages of 6 and 14, and secondary education between the ages of 12 and 18, thereby overlapping the elementary by two years. Twelve years of study, therefore, lead to the medical course, which covers six years, including preliminary work in physics, chemistry and biology. The complete course requires 18 years and the minimum age at the completion of the course is 24.

AUSTRIA.—Elementary education extends between the ages of 6 and 14, overlapping the gymnasium course by four years, the latter extending between the ages of 10 and 18. Twelve years of study, therefore, admit to medicine. The medical course covers six years and includes preliminary courses in physics, chemistry and biology. The total time required is 18 years and the minimum age at completion is 24.

BELGIUM.—Elementary education extends between the ages of 6 and 14, overlapping the work in the Royal Athénées, the secondary schools, by three years, the latter extending between the ages of 11 and 18. The time spent in the primary and secondary schools is, therefore, 12 years. An additional year devoted to physics, chemistry and biology in a college of science admits to the five-year medical course. The time necessary to complete the work is 18 years and the minimum age at completion is 24.

BRAZIL.—Elementary education extends between the ages of 7 and 15, overlapping the work of the gymnasium by three years, the latter extending between the ages of 12 and 19. Elementary work may be begun at the age of 6 years, and in such cases students may finish the gymnasium at 18. Twelve years of work lead to medicine, where six years of work are required, including preliminary courses in physics, chemistry and biology. The time required to complete the entire course is 18 years and the usual age at completion is 25.

DENMARK.—Elementary education extends between the ages of 6 and 12, leading to the "laerdeskoler," the secondary schools which extend between the ages of 12 and 18, a total of 12 years. The medical course covers six years, including preliminary courses in the natural sciences. Time to complete the work is 18 years and the minimum age at completion is 24.

FRANCE.—Elementary education extends between the ages of 6 and 13 or 14. The majority of students entering the secondary schools, however, obtain their elementary work from tutors or in special preparatory courses connected with the lycées. The secondary school, the lycée, has a nine-year course divided into two cycles of five and four years, respectively, and extends between the ages of 11 and 18. From age 6, therefore, twelve years of training are required to complete the primary and secondary work. An additional year devoted to the natural sciences which must be taken in a college of science admits to the four-year medical course. Entire course therefore, is 17 years and the age at completion is 23.

GERMANY.—Elementary study extends between the ages of 6 and 14, overlapping the gymnasium by four years, the latter extending between the ages of 10 and 18. Then follows a six-year course, which includes preliminary courses in the natural sciences, and the last year must be spent in hospital work. This gives the right to practice, but additional work is required, and a severe examination, the "examen rigorosum," must be passed to secure the degree of doctor. Eighteen years of work lead to medical practice or 19 to the Doctorate, and the age at completion is at least 24 or 25.

GREAT BRITAIN.—There appears to be no connection between elementary and secondary systems of education. Elementary public schools have been provided, extending between the ages of 6 and 12 or 15. Those entering secondary schools usually obtain their elementary instruction from private tutors or in the preparatory courses of the secondary schools. At present there are no public secondary schools in Great Britain, although that country abounds in private secondary schools, having courses varying as to age. Taking Rugby as an example, the course extends from the age of 10 to 17. Others extend from the age of 12 to 19. There are various ages at which the student may enter the medical schools, the minimum age fixed by the General Medical Council being 16. The time spent in elementary and secondary education, therefore, ranges from 10 to 13 years. Work must then be taken in physics, chemistry and biology either in a college of science or in the medical college as a part of the regular five-year medical course. Authorities agree that only a small proportion of students enter the medical school before the 18th year and few graduates in medicine before the age of 23. Since the promotion from one grade to another depends entirely on the passing of an examination, the time to complete the medical course usually requires six or more years.

GREECE.—Elementary education is given in the "demotic" schools between the ages of 6 and 10 and in the "hellenic" schools between the ages of 10 and 14, leading to the secondary schools or gymnasia, which occupy the time between the ages of 14 and 18. Twelve years are occupied, therefore, by elementary and secondary education. Two years of work in the university devoted to botany, chemistry, physics, mineralogy, geology and zoology must be completed in order to begin the four-year medical course for the degree of Doctor. To secure the right to practice, nine months of postgraduate work in a hospital must be completed. The total time requirement is 19 years, and the minimum age at completion of the entire course is 25.

HUNGARY.—Elementary education extends between the ages of 6 and 12 years, overlapping secondary education, which extends between the ages of 10 and 18. The 12 years' work thus completed leads to the five-year medical course, which includes preliminary work in physics, chemistry and biology. The time for the entire course is therefore, 17 years and the minimum age at completion is 23.

ITALY.—Elementary education is divided into lower elementary extending between the ages of 6 and 9 years and higher elementary extending between 9 and 12 years. Secondary education is given in the ginnasio, extending between the ages of 10 and 15 years and in the liceo which extends between the ages of 15 and 18 years. This is followed by a six-year course in medicine which includes work in the natural sciences. The complete course, therefore, is elementary study 4 years, ginnasio 5 years, liceo 3 years and medicine 6 years, a total of 18 years. The minimum age at completion of the course is 24 years.

JAPAN.—Ordinary elementary education extends between the ages of 6 and 10 years and higher elementary education is between the ages of 10 and 14 years, overlapping the work of the "middle school" by two years, the latter extending between the ages of 12 and 17 years. Completing the work of the middle school admits to the four-year medical course in all medical schools, except those at Tokio, Kioto and Fukuoka, which require also the completion of three years of higher preliminary education.

NETHERLANDS.—Elementary education extends between the ages of 6 and 12 years, leading to the gymnasium, which extends from the 12th to the 18th year. Admission is then secured to the six-year medical course, which includes work in the natural sciences. The time to complete the entire course is 18 years and the minimum age is 24.

NORWAY.—Elementary education extends between the ages of 6 and 12 years, overlapping the secondary, which extends between the ages of 9 and 18 years. Secondary education is divided into a six-year middle school and a three-year gymnasium. The completion of the course of the gymnasium admits to the six-year medical course, which includes work in physics, chemistry and biology. The entire time, therefore, is 18 years and the minimum age at completion is 24. This gives the right to practice with the title of physician. The degree of Doctor requires extra work and the passing of special examinations.

PORTUGAL.—Elementary education extends between the ages of 6 and 12 years, thus overlapping the work of the lyceum, which extends between the ages of 9 and 16. This is followed by a course of one or two years in a faculty of philosophy and mathematics and then five years in medicine for the degree of licentiate in medicine and a sixth year for the degree of Doc-

tor. The time for the entire course, therefore, is 18 years and the minimum age at completion is 24.

RUSSIA.—Elementary education extends for 5 years between the ages of 6 and 11. Secondary education, as given in the gymnasium, extends over 7 years between the ages of 11 and 18. Completion of the secondary work admits to the 5-year medical course, which includes preliminary work in the natural sciences extending through the first two years along with other subjects. The total time is 17 years and the minimum age at completion is 23.

SPAIN.—Elementary education extends between the ages of 6 and 14 years, overlapping the work of the gymnasia, the secondary schools, which conduct work between the ages of 10 and 17. After completing the work of the gymnasium, one year of "preliminary study" must be taken, devoted to chemistry and natural science. Six years more gives the degree of licentiate in medicine and one more that of doctor. The complete course, therefore, requires 18 years of study and the minimum age at completion is 24.

SWEDEN.—Elementary education extends over 7 years between the ages of 6 and 13. Secondary education consists of a five-year lower modern course and a four-year higher gymnasium, the two courses being attended by students between the ages of 9 and 18. After completing the gymnasium, one year of preliminary work in the natural sciences must be taken in a college of philosophy. Seven years more of study gives the degree of licentiate in medicine, which carries with it the right to practice. To secure the degree of Doctor requires more work and the passing of special examinations. Promotion to each succeeding grade depends on the passing of an examination, and the medical course often extends to 9 or more years. The entire course, therefore, includes: elementary work, 3 years; lower modern school, 5 years; higher gymnasium, 4 years; college of philosophy, 1 year, and medicine, 7 years, a total of 20 years. The age at completion is 26 to 28 years.

SWITZERLAND.—The Cantons differ somewhat in the length of their secondary courses, but all agree in regard to the preliminary work for admission to medicine and the length of the medical course. Taking the Canton of Zürich as an example, the elementary work extends over 6 years between the ages of 6 and 12. The secondary schools, known as gymnasia (realschulen or lycea), have courses covering seven years, students attending between the ages of 11 and 18. Graduation from the gymnasium admits to the five-year medical course, which includes preliminary courses in physics, chemistry and biology. The entire course, therefore, requires: elementary work, 5 years; gymnasium, 7 years, and medicine, 5 years, a total of 17 years. The minimum age at completion is 23. The degree of Doctor is not essential to practice, but may be obtained by writing a special thesis and taking certain courses without necessarily requiring a longer course.

URUGUAY.—Elementary education extends between the ages of 6 and 14 years, leading to the secondary, which extends from the 14th to the 18th year. A six-year medical course follows, which includes preliminary work in physics, chemistry and biology. The time to complete the entire work is 18 years, and the minimum age at completion is 24.

THE AMERICAN MEDICAL ASSOCIATION STANDARDS OF MEDICAL EDUCATION

These standards were suggested by the Council on Medical Education and the reports were adopted by the House of Delegates of the American Medical Association.

Standard Now Recommended

The minimum standard now recommended prerequisite to the practice of medicine is as follows:

1. (a) The preliminary requirement to be a four-year high school education or its equivalent, such as would admit the student to one of our recognized universities; (b) and in addition (after Jan. 1, 1910), a year of not less than nine months, devoted to the study of physics, chemistry, biology and one language (preferably German or French), to be taken either in a college of liberal arts or in a recognized medical college having a preliminary year devoted exclusively to the subjects mentioned.

2. There should be a requirement that previous to matriculation in a medical college every student must secure from the State Examining Board a "medical student's entrance certificate," which would be issued either on presentation of credentials of preliminary education not less than that laid down by requirement one, or on passing an examination given by the Board and which will satisfy the Board that the student has an equivalent education.

3. A medical training in a medical college, having four years of not less than thirty weeks each year, exclusive of holidays, of thirty hours per week of actual work.

4. Graduation from an approved medical college required to entitle the candidate to an examination before a state examining board.

5. The passing of a satisfactory examination before a state examining board.

The Ideal Standard

The ideal standard to be aimed at from the present viewpoint should consist of: (A) Preliminary education sufficient to enable the candidate to enter our recognized universities, such qualifications to be passed upon by the state authorities. (B) A course of at least one year to be devoted to physics, chemistry and biology, such arrangement to be made that this year could be taken either in a college of liberal arts or in the medical school. (C) Four years in pure medical work, the first two of which should be largely spent in laboratories of anatomy, physiology, pathology, pharmacology, etc., and the last two in close contact with patients in dispensaries and hospitals in the study of medicine, surgery, obstetrics, and the specialties. (D) A sixth year as an interne in a hospital or dispensary should then complete the medical course.

Under such a scheme the majority of men would begin the study of medicine between 18 and 19 years of age, and would graduate from the hospital interneship at from 24 to 25. A college education is recognized as a desirable preparation for a limited number of men, but it is thought that it is not and never will be desirable to make such college education a requirement to the study of medicine, as it would make the age of graduation from 27 to 28 years, which is regarded as too old a period at which the young medical man should begin his life's work. It is obvious that this very desirable scheme of requirements can not be at once demanded or recommended.

A Medical College in Good Standing

Below is a schedule of the minimum requirements, laboratory equipment and clinical facilities which should obtain in a medical college before it can be considered as giving a satisfactory course or be determined as a medical college in good standing:

I. REQUIREMENTS

1. Matriculation.—For matriculation the medical college should require of each student:

(1) A certificate of good moral character, signed by two reputable physicians of the state in which the applicant resides; and,

(2) As evidence of satisfactory preliminary education, a medical student's matriculation certificate, issued by the state board of medical examiners or its authorized agent, this certificate to be issued on (A) acceptable credentials, or (B) on successfully passing a preliminary examination.

A. Acceptable Credentials.—(a) A degree from an accredited university or college of arts or science; or,

(b) A diploma from an accredited four-year high school, normal school or academy which required for admission eight years of study in the primary and intermediate grades and which furnished a preliminary education of at least 15 units (30 points or credits, or 75 counts), as given in the following outline (suggested by Dr. W. J. Means, a member of the Council's committee and also chairman of the Judicial Council of the Association of American Medical Colleges):

REQUIRED BRANCHES.

	Units.	Points.	Counts.
Rhetoric and composition	1	2	5
History of English and American literature	1	2	5
Algebra through graduates	1	2	5
Geometry, plane	1	2	5
Latin, grammar and 4 books of Cæsar or equivalent	2	4	10
U. S. History and Civics	1	2	5
Physics, with laboratory work	1	2	5
Total	8	16	40

ELECTIVE BRANCHES.

Seven units, 14 points or credits, or 35 counts to be selected from the following subjects. Not more than 2 units, 4 points or credits or 10 counts from any one group:

Group 1:	Units.	Points.	Counts.
English Classics (College Entrance Examining Board list)	2	4	10
Group 2:			
Geometry, solid	.5	1	2.5
Trigonometry	.5	1	2.5
Group 3:			
Latin, Cicero (7 orations)	1	2	5
Latin, Virgil (6 books)	1	2	5
Group 4:			
German, grammar with 2 years' certified work	2	4	10
French, grammar with 2 years' certified work	2	4	10
Spanish, grammar with 2 years' certified work	2	4	10
Group 5:			
History, Greece and Rome	1	2	5
History, medieval and modern	1	2	5
History, England, half years' work	.5	1	2.5
History, France, half years' work	.5	1	2.5
Group 6:			
Biology, with laboratory work	1	2	5
Botany, with laboratory work	.5	1	2.5
Zoology, with laboratory work	.5	1	2.5
Physiology and Hygiene, with laboratory work	1	2	5
Group 7:			
Chemistry, with laboratory	1	2	5
Total	18	36	90

A *unit* is the credit value of 36 weeks' work of 5 recitation periods per week, each recitation period to be of not less than 45 minutes.

A *point* is the credit value of 18 weeks' work of 5 recitation periods per week, each recitation period to be of not less than 45 minutes.

A *count* is the credit of one recitation period per week of not less than 45 minutes through 36 weeks.

It is urged that within a reasonable time the minimum requirements as given in paragraph (b) will be enlarged to include an additional year or university physics, chemistry, biology and a reading knowledge of German or French.

B. Preliminary Examination.—The preliminary examination should be taken before the board of medical examiners or its authorized agent, and should represent the work of 15 units (30 points or credits or 75 counts) in accordance with the above outline. Under no circumstances must this examination be given by any one connected with the medical college.

Later, when the requirement is considered reasonable, university courses in physics, chemistry, biology and modern languages should be required in this examination.

2. Medical Education.—The medical college should give a strictly graded course covering four years of not less than thirty weeks each year, exclusive of holidays. Each year should cover not less than thirty hours per week of scheduled class room work in lectures, recitations, laboratory and clinical work. At least forty-two calendar months should elapse between the dates of matriculation and graduation. The complete course should approximate 3,600 hours and include:

(a) Two years of study, consisting largely of laboratory work in anatomy, histology, embryology, physiology, chemistry, pharmacology, physiologic chemistry, bacteriology and pathology.

(b) Two years of clinical work largely in hospitals and dispensaries, with thorough courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, materia medica, pharmacology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene and medical jurisprudence. There should also be a laboratory course in clinical microscopy, including hematology, and the hospital courses should be accompanied by work in properly equipped clinical laboratories.

3. Advanced Standing.—(a) Advanced standing may be granted to the extent of three years of work taken at other recognized colleges.

(b) In giving advanced standing the college should not discriminate against its own full-course students. It is meant by this that students should not be given full standing when they come from colleges not giving equivalent courses.

(c) Before granting any advanced standing the dean or secretary of the school to which the student seeks admission should obtain from the corresponding officer of the school from which the student comes a full statement of his credentials, so far as preliminary and medical education is concerned, and the standing of the student in each course he has taken.

4. Graduation.—The medical college should require of each student before graduation:

(a) Compliance with the above given requirements of preliminary and medical education.

(b) An attendance of at least 80 per cent. on each course of instruction above mentioned.

(c) The passing of a final examination in each course of instruction above mentioned with a percentage of at least 75.

(d) The individual dissection of at least one lateral half of a human cadaver.

(e) The individual attendance on and management of at least two maternity cases.

(f) The work of at least the fourth or senior year must be taken in the medical college granting the degree.

II. EQUIPMENT AND FACILITIES

1. Buildings.—The medical college buildings should be well lighted, sanitary and commodious, with ample space for laboratories, amphitheaters, examining, lecture, recitation and special research rooms, as well as storage rooms and a suitable place for such animals as are used in experimental work.

2. Laboratories.—There should be well-equipped laboratories for practical anatomy, histology, embryology, physiology, chemistry, physiologic chemistry pharmacology, bacteriology and pathology, and these laboratories should be officered by trained instructors paid to devote their entire time to the preparation of materials used in instruction and to teaching and research. By a well-equipped laboratory is understood a laboratory provided with all the microscopes and other apparatus necessary to enable each student to carry on the work of that department intelligently and successfully.

3. Hospitals, Dispensaries and Clinical Facilities.—(a) The main hospital and dispensary should be in close proximity to the college building, of easy access to the students, and should be under the control of the college at least so far as clinical material is concerned.

(b) The hospital material available for clinical purposes should be in proportion to a daily average of at least 200 patients to 100 students in the senior class.

(c) The dispensary material should be carefully classified and properly used.

4. Library, Museum, Charts, Etc.—(a) Library: The medical college should have a working medical library, including the more recent text and reference books, as well as ten or more of the chief medical periodicals. This library room should be easily accessible, should be provided with suitable tables and chairs, and should have an attendant in charge.

(b) Museum: There should be a medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed in order that any specimen may be easily found and employed for teaching purposes. The value of the pathologic collection could be greatly augmented by having slides showing the microscopic findings in each case carefully prepared, labeled, indexed and kept easily accessible. Clinical records of these cases should also be drawn up, indexed and filed for easy reference.

(c) Charts, Models, Stereopticons, Etc.—The medical college should have a supply of anatomic charts, embryologic models and other apparatus, such as a steropticon or a reflectoscope, as well as microphotographic, Roentgen ray or other apparatus, of service in the teaching of medicine.

(Continued on page 549)

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES

Number.	NAME AND LOCATION OF COLLEGE	Population of city where college is located. (Census Bureau estimate, 1906.)	No. of students registered 1903-9.		Graduates 1909.		Grads. with A.B., or B.S.	No. of teachers.	Weeks in college year.	Total fees. (Dollars.)				Executive Officer.	Session of 1909-10.		Number.
			Men.	Women.	Men.	Women.				1st year.	2nd year.	3rd year.	4th year.		Begins 1909.	Ends 1910.	
	ALABAMA		360	.....	57	.....	.....										
1	Birmingham Medical College, Birmingham.—R.	45,869	169	.....	28	.....	.....	32	28	75	75	75	100	R. L. Wyman, M.D., Dean	Sept. 29	April 28	1
2	University of Alabama, Medical Dept., Mobile.—	42,903	191	.....	29	.....	.....	25	28	100	100	100	125	Rhett Goode, M.D., Dean	Sept. 20	April 18	2
	ARKANSAS		257	3	35	1	6										
3	College of Physicians and Surgeons, Little Rock.—R.	39,950	80	1	14	0	4	4.	28	75	75	75	100	J. P. Runyan, M.D., Dean	Oct. 1	May 1	3
4	Univ. of Arkansas, Med. Dept., Little Rock.—R.	39,959	177	2	21	1	2	32	28	75	75	75	100	C. E. Witt, M.D., Secretary	Oct. 1	April 30	4
	CALIFORNIA		314	30	69	6	5										
5	Cooper Medical College, San Francisco.—R. (a)	364,677	116	1	21	1	1	54	35	175	170	170	195	Henry Gibbons, Jr., M.D., Dean	Aug. 15	May 7	5
6	Univ. of California, Med. Dept., San Francisco.—R.	364,677	26	10	4	1	4	62	36	150	150	150	150	Arnold A. D'Ancona, M.D., Dean	Aug. 15	May 11	6
7	Hahn. Med. Coll. of the Pacific, San Francisco.—H.	364,677	19	4	5	1	.....	31	33	155	100	100	100	James W. Ward, M.D., Dean	Aug. 31	April 28	7
8	College of Phys. and Surg., San Francisco.—R.	364,677	40	.....	11	.....	.....	60	32	105	100	100	125	Winslow Anderson, M.D., President	Sept. 14	May 14	8
9	Oakland College of Med. and Surg., Oakland.—R.	73,812	17	.....	4	.....	.....	33	36	165	160	150	175	Edward N. Ewer, M.D., Registrar	Aug. 15	May 21	9
10	Univ. of Southern California, Los Angeles.—R. (b)	102,479	61	11	15	3	.....	61	35	.....	.....	150	150	W. Jarvis Barlow, M.D., Dean	Sept. 15	June 10	10
11	College of Physicians and Surgeons, Los Angeles.—R.	102,479	28	4	5	0	.....	42	36	135	132	107	132	Charles W. Bryson, M.D., Dean	Sept. 15	June 15	11
12	California Eclectic Medical College, Los Angeles.—E.	102,479	7	...	4	...	.....	27	32	200	200	200	200	J. A. Munk, M.D., Dean	Sept. 13	May 21	12
	COLORADO		176	21	34	7	12										
13	Denver and Gross College of Medicine, Denver.—R.	151,920	102	7	22	1	8	71	32	130	131	103	126	Frost C. Buchtel, M.D., Secretary	Sept. 28	May 26	13
14	Denver College of Phys and Surgs., Denver.—P.	151,920	25	9	2	5	1	46	32	125	126	113	126	David A. Strickler, M.D., Dean	Sept. 6	May 12	14
15	University of Colorado School of Med., Boulder.—R.	12,000	49	5	10	1	3	47	35	52	52	52	52	William P. Harlow, M.D., Dean	Sept. 13	June 8	15
	CONNECTICUT		141	.....	15	.....	1										
16	Yale Medical School, New Haven.—R.	121,227	141	.....	15	.....	1	64	35	168	158	150	160	Herbert E. Smith, M.D., Dean	Sept. 30	June 22	16
	DISTRICT OF COLUMBIA		442	8	74	0	17										
17	George Washington Univ., Dept. of Med. Wash.—R.	307,716	151	5	33	0	7	82	32	150	150	150	150	William C. Borden, M.D., Dean	Sept. 29	June 1	17
18	Georgetown Univ., School of Med., Washington.—R.	370,716	89	.....	15	.....	3	63	33	150	150	150	150	George M. Kober, M.D., Dean	Oct. 1	June 11	18
19	Howard University, Med. Dept., Washington	307,716	202	3	26	0	7	52	32	105	100	100	107	William C. McNeill, M.D., Secretary	Oct. 1	June 1	19
	GEORGIA		764	5	141	1	16										
20	Atlanta College of Phys and Surg., Atlanta.—R.	104,984	280	.....	37	.....	9	51	28	80	80	100	100	W. S. Elkins, M.D., Dean	Sept. 27	May 1	20
21	Atlanta School of Medicine, Atlanta.—	104,984	281	.....	51	.....	2	40	28	70	70	80	80	Edward G. Jones, M.D., Proctor	Oct. 1	May 1	21
22	Georgia Coll. of Eclectic Med. and Surg., Atlanta.—E	104,984	64	2	14	1	2	20	28	80	80	80	105	Elzie B. Thomas, M.D., Proctor	Sept. 21	April 21	22
23	Hospital Medical College, Atlanta.—E.	104,984	40	3	17	0	1	24	26	80	80	80	110	W. Bernard Lingo, M.D., Dean	Sept. 15	April 1	23
24	Medical College of Georgia, Augusta.—R.	43,125	99	.....	22	.....	2	34	28	90	85	100	100	Joseph Eve Allen, M.D., Dean	Oct. 1	May 1	24
	ILLINOIS		2597	281	563	40	95										
25	American Medical Missionary College, Chicago.—R.	2,049,185	36	24	1	4	.....	32	35	83	82	75	75	E. L. Eggleston, M.D., Secretary, Battle Creek, Mich.	Sept. 14	June 10	25
26	Bennett Medical College, Chicago.—R.	2,049,185	175	11	34	5	.....	57	32	105	100	100	100	John D. Robertson, M.D., President	Sept. 21	May 23	26
27	Chicago College of Medicine and Surgery.—R.	2,049,185	372	24	73	7	.....	71	30	120	115	100	115	Henry S. Tucker, M.D., Dean	Sept. 28	May 16	27
28	College of Medicine and Surgery, Chicago.—Ph.M.	2,049,185	26	7	9	1	.....	49	30	115	110	110	135	William F. Scharre, M.D., Secretary	Sept. 21	May 12	28
29	College of Physicians and Surgeons, Chicago.—R.	2,049,185	476	41	116	14	.....	198	32	145	145	150	175	William E. Quine, M.D., Dean	Oct. 1	June 8	29
30	Hahnemann Med. College and Hospital, Chicago.—H.	2,049,185	116	14	23	2	.....	86	31	100	100	100	100	W. Henry Wilson, M.D., Registrar	Sept. 21	May 15	30
31	Hering Medical College, Chicago.—H.	2,049,185	33	7	8	2	3	50	32	100	100	100	100	Robert N. Morris, M.D., Dean	Sept. 28	June 2	31
32	Illinois Medical College, Chicago.—R.	2,049,185	58	4	16	0	.....	58	32	130	130	125	125	J. F. Burkholder, M.D., President	Sept. 2	April 29	32
33	Jenner Medical College, Chicago.—R.*	2,049,185	102	10	10	2	.....	50	40	110	110	110	110	John D. MacKellar, M.D., Registrar	Aug. 30	July 1	33
34	National Medical University, Chicago.—P.*	2,049,185	135	15	11	1	3	36	36	150	150	150	150	L. D. Rogers, M.D., Dean	Oct. 1	June 30	34
35	Northwestern University Med. School, Chicago.—R.	2,049,185	537	84	172	0	23	143	31	194	200	191	185	Charles Louis Mix, M.D., Secretary	Oct. 5	May 29	35
36	Reliance Medical College.—R.*	2,049,185	79	4	17	1	4	65	39	130	130	125	125	Charles Louis Mix, M.D., Secretary	Sept. 7	June 29	36
37	Rush Medical College, Chicago.—R.	2,049,185	152	36	73	1	62	230	34	180	180	180	180	J. F. Burkholder, M.D., President	Oct. 1	June 18	37
	INDIANA		273	7	69	1	11	182	36	100	100	130	135	John M. Dodson, M.D., Dean	Sept. 21	June 22	38
38	Indiana University, School of Med., Indianapolis—R.	219,154	250	7	63	1	11							B. D. Myers, M.D., Sec'y., Bloomington; E. D. Clark, M.D., Sec'y., Indianapolis	Sept. 7	May 3	39
39	Physiomedical Coll. of Indiana, Indianapolis.—Ph.M.	219,154	19	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	C. T. Bedford, M.D., Dean	Sept. 20	June 15	40
	IOWA		433	25	69	4	13										41
40	Drake University College of Med., Des Moines.—R.	78,323	119	11	16	3	2	46	35	75	75	75	75	William W. Pearson, M.D., Dean	Sept. 20	June 15	42
41	Sioux City College of Medicine, Sioux City.—R.	42,520	20	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	F. E. Franchere, M.D., Dean	.....	.....	43
42	State Univ. of Iowa, Coll. of Med., Iowa City.—R.	8,497	254	12	40	1	10	32	35	60	50	50	60	Walter L. Bierring, M.D., Vice-Dean	Sept. 20	June 15	44
43	State University of Iowa, College of Homeopathic Medicine, Iowa City.—H.	8,497	40	2	7	0	1	25	35	60	50	50	60	George Royal, M.D., Dean	Sept. 20	June 15	45
	KANSAS		200	8	30	1	1										
44	Kansas Medical College, Topeka.—R.	41,886	66	2	17	0	.....	47	35	65	65	65	65	William E. McVey, M.D., Dean	Sept. 14	June 8	46
45	Univ. of Kansas, School of Med., Kansas City.—R (c)	77,912	85	5	7	0	1	79	35	60	60	100	100	Mervin T. Sudler, M.D., Dean, Lawrence; George H. Hoxie, M.D., Dean, Rosedale	Sept. 15	June 8	
46	Western Eclec. Coll. of Med. and Surg., Kan. Cy.—E	77,912	49	1	6	1	.....	32	30	90	95	100	115	William H. Smith, M.D., Secretary	Sept. 6	April 30	47

	KENTUCKY		754	5	186	2	.....												
47	Louisville National Medical College, Louisville.—R..	226,129	38	2	3	1	.....	28	30	60	55	55	75	E. S. Porter, M.D., Dean	Oct. 1	May 18	47
48	Southwestern Homeopathic College, Louisville.—H....	226,129	10	3	2	1	.....	23	30	75	75	75	95	George S. Coon, M.D., Dean	Oct. 6	May 19	48
49	University of Louisville, Med. Dept., Louisville.—R..	226,129	706	.....	181	.....	.....	90	30	100	100	100	125	Thomas C. Evans, M.D., Dean	Nov. 15	June 30	49
	LOUISIANA		**463**	.....	**109**	.....	**30**												
50	Flint Medical College, New Orleans.—R.....	314,146	24	0	6	0	.....	15	30	53	53	53	60	J. W. Thomas, M.D., Dean	Sept. 22	May 12	50
51	Tulane University Med. Dept., New Orleans.—R.....	314,146	439	....	103	.....	30	73	30	150	150	150	150	Isadore Dyer, M.D., Dean	Oct. 1	May 18	51
	MAINE		**81**	....	**18**	.....	**8**												
52	Medical School of Maine, Portland.—R.....	55,167	81	...	18	...	8	35	32	120	110	110	110	Alfred Mitchell, M.D., Dean, Brunswick	Oct. 21	June 22	52
	MARYLAND		**1298**	**45**	**301**	**8**	**67**												
52	Atlantic Medical College, Baltimore—R. (d).....	553,669	43	...	25	....	.....	50	30	95	95	95	105	Eldridge C. Price, M.D., Dean	Oct. 1	June 3	53
54	Baltimore Medical College, Baltimore—R.....	553,669	397	...	57	....	....	71	32	125	125	125	125	David Streett, M.D., Dean	Sept. 20	May 25	54
55	College of Physicians and Surgeons, Baltimore.—R..	553,669	252	.....	46	....	1	57	32	155	155	155	185	Charles F. Bevan, M.D., Dean	Oct. 1	June 1	55
56	Johns Hopkins Univ., Med. Dept., Baltimore.—R....	553,669	272	25	47	3	50	112	33	200	200	200	200	William H. Howell, M.D., Dean	Oct. 5	June 14	56
57	Maryland Medical College, Baltimore.—R.....	553,669	95	....	37	..	...	41	33	86	86	86	110	Harry Gross, M.D., Dean	Sept. 15	June 1	57
58	University of Maryland, School of Med., Baltimore..	553,669	329	....	89	...	16	62	32	155	155	155	185	R. Dorsey Coale, M.D., Dean	Oct. 1	June 1	58
59	Woman's Medical College of Baltimore.—R.....	553,669	...	20	...	5	...	32	32	106	106	106	86	John R. Abercrombie, M.D., Dean	Oct. 1	June 1	59
	MASSACHUSETTS		**857**	**79**	**133**	**11**	**66**												
60	Boston University, School of Medicine.—H.....	602,278	69	26	15	3	8	64	31	127	127	27	155	John P. Sutherland, M.D., Dean	Oct. 7	June 1	60
61	College of Physicians and Surgeons, Boston.—R.....	602,27	157	15	11	1	....	30	36	80	105	105	135	Charles H. Cobb, M.D., Dean	Sept. 16	June 15	61
62	Harvard Medical School, Boston.—R.....	602,278	285	....	55	...	52	166	36	220	20	30	203	Henry A. Christian, M.D., Dean	Sept. 30	June 30	62
63	Tufts College Medical School, Boston.—R.....	602,278	346	38	52	7	6	103	32	155	15	55	155	Frederic M. Briggs, M.D., Secretary	Sept. 29	May 26	63
	MICHIGAN		**651**	**29**	**134**	**6**	**23**												
64	Detroit College of Medicine, Detroit.—R.....	353,535	161	....	38	...	...	104	32	115	120	90	140	F B. Walker, M.D., Registrar	Sept. 22	May 26	64
65	Detroit Homeopathic College, Detroit.—H.....	353,535	32	2	7	0	...	36	32	95	85	75	95	J. M. Griffin, M.D., Registrar	Sept. 14	May 1	65
66	Univ. of Michigan, Dept. of Med., Ann Arbor.—R.(e)	14,645	383	21	69	5	21	63	35	105	95	95	55	Victor C. Vaughan, M.D., Dean	Oct. 5	June 30	66
67	University of Michigan, Homeo. Coll., Ann Arbor.—H	14,645	75	6	20	1	2	11	35	105	95	95	55	W. B. Hinsdale, M.D., Dean	Oct. 5	June 30	67
	MINNESOTA		**233**	**10**	**61**	**3**	**26**												
68	Univ. of Minn., Coll. of Med. and Surg., Minneapolis	273,825	235	10	45	2	26	111	35	104	107	104	102	F. F. Wesbrook, M.D., Dean	Sept. 14	June 9	68
69	Univ. of Minn., Coll. of Homeo. Med. and Surg.-H.(f)	273,825	3	....	1	....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	69
70	Hamline Univ., Med. Dept., Minneapolis.—R. (g)..	273,825	.....	.....	15	1	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	70
	MISSISSIPPI		**126**	**3**	**15**	....	...												
71	University of Mississippi, Med. Dept., Vicksburg.—R	15,710	27	....	....	.....	.....	30	32	75	75	75	75	W. S. Leathers, M.D., Dean, University; Wm. Krauss, M.D., Dean, Vicksburg..	Sept. 23	June 1	71
72	Mississippi Medical College, Meridian—R.....	20,503	99	3	15	0	..	19	28	85	85	75	100	T. A. Barber, M.D., Dean	Oct. 1	April 30	72
	MISSOURI		**1171**	**34**	**286**	**10**	**22**												
73	University of Missouri, Med. Dept., Columbia.—R.†.	8,000	44	3	5	0	1	27	34	75	70	.....	.....	C. M. Jackson, M.D., Dean	Sept. 23	June 9	73
74	Kansas City Hahnemann Med. Coll., Kansas City.—H	182,376	39	7	12	2	....	44	32	105	100	100	100	William E. Cramer, M.D., Dean	Sept. 8	May 17	74
75	University Medical College, Kansas City.—R.....	182,376	161	....	47	...	2	66	32	100	100	100	125	J. M. Frankenburger, M.D., Dean	Sept. 8	May 13	75
76	Ensworth Medical College, St. Joseph.—R.....	118,004	72	....	24	..	....	34	31	90	95	75	95	J. E. Potter, M.D., Secretary	Sept. 20	May 10	76
77	American Medical College, St. Louis.—E.....	649,320	25	3	6	1	.....	28	31	80	80	80	100	J. J. Link, M. D., Dean	Sept. 1	May 4	77
78	Barnes Medical College, St. Louis.—R.....	649,320	117	7	33	3	....	68	32	100	100	100	100	C.M. Ament, M.D., Secretary	Sept. 14	May 14	78
79	Hippocratean College of Medicine, St. Louis.—R.*..	649,320	28	3	0	0	....	28	38	105	100	100	125	Emory Lanphear, M.D., Dean	Sept. 6	June 15	79
80	Homeopathic Med. Coll. of Missouri, St. Louis.—H.(h)	649,320	13	2	2	0	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80
81	St. Louis University, School of Medicine.—R.....	649,320	243	....	47	....	15	121	32	110	110	110	110	E. P. Lyon, M.D., Dean	Oct. 1	May 30	81
82	St. Louis College of Physicians and Surgeons.—R....	649,320	226	8	62	4	....	32	32	80	75	75	85	Waldo Briggs, M.D., Dean	Sept. 9	May 7	82
83	Washington University, Med. Dept., St. Louis.—R..	649,320	200	1	48	0	4	98	33	137	133	117	102	William H. Warren, Ph.D., Dean	Sept. 21	June 2	83
	NEBRASKA		**347**	**20**	**51**	**6**	**13**												
84	Creighton Medical College, Omaha.—R.....	124,167	166	11	27	3	1	51	32	105	100	100	105	D. C. Bryant, M.D., Dean	Sept. 1	May 2	84
85	Univ. of Nebr., Coll. of Med., Lincoln and Omaha.—R	124,167	117	5	8	1	7	84	32	100	100	100	100	Harold Gifford, M.D., Dean, Omaha	Sept. 21	May 19	85
86	Lincoln Medical College, Lincoln.—E.....	48,232	40	2	8	1	4	44	35	80	75	75	85	R. H. Spradling, M.D., Secretary	Sept. 9	June 5	86
87	Nebraska College of Medicine, Lincoln—R.(h).....	48,232	21	2	8	1	1	...	...	.....	.....	.....	.....	.....	.....	.....	87
	NEW HAMPSHIRE		**58**	....	**14**	.....	**6**												
88	Dartmouth Medical School, Hanover.—R.....	1,684	58	....	14	.....	6	2	36	100	100	100	100	William T. Smith, M.D., Dean	Sept. 24	June 30	88
	NEW YORK		**2048**	**76**	**421**	**8**	**86**												
89	Albany Medical College, Albany.—R.....	98,537	180	....	37	.....	6	67	31	130	145	120	130	Willis G. Tucker, M.D., Registrar	Sept. 21	May 17	89
90	Columbia Univ., Coll. of Phys. and Surg., N. Y.—R.	4,113,043	312	....	82	.....	55	166	33	255	250	250	275	Samuel W. Lambert, M.D., Dean	Sept. 22	June 1	90
91	Cornell University Medical College, New York.—R..	4,113,043	197	20	52	2	9	167	34	190	185	185	200	W. M. Polk, M.D., Dean	Sept. 29	June 15	91
92	Eclectic Medical College of the City of New York.—E.	4,113,043	86	10	9	0	...	39	32	125	125	125	155	George W. Boskowitz, M.D., Dean	Sept. 15	May 15	92
93	Fordham University School of Med., New York.—R.	4,113,043	43	.....	11	.....	1	73	29	195	190	190	180	James J. Walsh, M.D., Dean	Sept. 30	May 23	93
94	Long Island College Hospital, New York.—R.....	4,113,043	364	.....	75	.....	....	107	32	200	200	160	195	Joseph H. Raymond, M.D., Secretary	Sept. 27	June 1	94
95	New York Homeopathic Med. Col. and Hospital.—H.	4,113,043	109	.....	16	.....	...	74	30	130	130	125	155	R. S. Copeland, M.D., Dean	Oct. 6	May 12	95
96	New York Med. Coll., and Hosp. for Women.—H....	4,113,043	.....	24	.....	4	...	38	30	.....	.....	.....	.....	Helen Cooley Palmer, M.D., Dean	Oct. 1	May 14	96
97	Univ. and Bellevue Hosp. Med. Col., New York.—R.	4,113,043	445	....	74	.....	8	123	32	200	200	200	200	Egbert Le Fevre, M.D., Dean	Sept. 29	June 1	97
98	Syracuse University, College of Med., Syracuse.—R.	118,880	136	13	31	2	5	57	32	181	191	151	166	John L. Heffron, M.D., Dean	Oct. 5	June 8	98
99	University of Buffalo, Medical Dept., Buffalo.—R....	381,819	176	9	34	0	2	97	32	185	180	140	140	Matthew D. Mann, M.D., Dean	Sept. 27	May 27	99
	NORTH CAROLINA		**384**	**1**	**51**	....	**4**												
100	Leonard Medical School, Raleigh.—R.....	14,225	125	.....	22	.....	2	10	30	15	15	15	25	James McKee, M.D., Dean	Sept. 30	May 12	100
101	University of N. Carolina, Med. Dept., Raleigh.—R.	14,225	113	.....	12	.....	..	45	35	114	116	75	80	I. H. Manning, M.D., Dean, Chapel Hill; H. A. Royster, M.D., Dean, Raleigh	Sept. 6	June 1	101
102	North Carolina Medical College, Charlotte.—R.....	22,009	93	1	17	0	2	29	30	85	85	85	100	W. O. Nisbet, M.D., Dean	Sept. 8	April 30	102
103	Wake Forest School of Medicine, Wake Forest.—R.†	823	53	.....	.....	.....	.....	10	34	100	100	.....	.....	John Brewer Powers, M.D., Dean	Sept. 6	May 25	103
	NORTH DAKOTA		**21**	**1**	.....	.....	.....												
104	University of North Dakota, Medical Department, University (Grand Forks)—R.†	10,127	21	1	.....	.....	.....	16	35	50	50	.....	.....	M. A. Brannon, A.M., Dean	Sept. 21	June 16	104

R, Regular; H, Homeopathic; E, Eclectic; P, Panpathic.

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES—(Continued)

Number.	NAME AND LOCATION OF COLLEGE	Population of city where college is located. (Census Bureau estimate, 1908.)	No. of students registered 1908-9.		Graduates 1909.		Grads. with A.B., or B.S.	No. of teachers.	Weeks in college year.	Total fees. (Dollars.)				Executive Officer.	Session of 1909-10.		Number.
			Men.	Women.	Men.	Women.				1st year.	2nd year.	3rd year.	4th year.		Begins 1909.	Ends 1910.	
	OHIO		**767**	**23**	**169**	**8**	**40**										
105	Cleveland College of Phys. and Surg., Cleveland.—R.	460,327	83	9	15	1	3	61	32	130	130	117	110	R. E. Skeel, M.D., Dean	Oct. 1	June 1	105
106	Cleveland Homeopathic Med. College, Cleveland. H.	460,327	38	3	11	2	....	57	31	125	125	125	125	George H. Quay, M.D., Dean	Sept. 23	May 14	106
107	Western Reserve Univ., Med. Dept., Cleveland.—R.	460,327	98	....	25	....	22	98	34	125	125	125	125	F. C Waite, M.D., Secretary	Oct. 1	June 16	107
108	Eclectic Medical Institute, Cincinnati.—E.	345,230	81	....	16	....	1	25	31	90	90	90	90	John K. Scudder, M.D., Secretary	Sept. 20	May 4	108
109	Medical College of Ohio, Cincinnati.—R. (i)	345,230	118	2	30	1	7	....	....	....	....	....	....	....	....	....	109
110	Miami Medical College, Cincinnati.—R. (i)	345,230	71	2	16	1	2	128	33	130	125	125	150	E. Otis Smith, M.D., Secretary	Sept. 27	June 4	110
111	Ohio-Miami Med. Col. of the Univ. of Cincinnati.—R.	345,230	....	....	....	....	1	32	32	80	75	75	100	C. E. Walton, M.D., Dean	Sept. 30	May 25	111
112	Pulte Medical College, Cincinnati.—H.	345,230	14	2	3	....	....	57	31	115	110	105	125	George M. Waters, M.D., Dean	Sept. 22	May 17	112
113	Starling-Ohio Medical College, Columbus.—R.	145,414	228	3	48	2	4	57	31	115	110	105	125	George M. Waters, M.D., Dean	Oct. 1	May 26	113
114	Toledo Medical College, Toledo.—R.	150,980	36	2	5	0	1	50	32	100	100	100	100	James Donnelly, M.D., Dean	....	....	114
	OKLAHOMA		**57**	**4**	**6**	....	....								Oct. 1	May 9	115
115	Epworth College of Medicine, Oklahoma City.—R.	20,990	48	3	6	0	....	43	29	100	100	75	105	A. K. West, M.D., Dean	Sept. 14	June 9	116
116	Univ. of Oklahoma, School of Med., Norman.—R.†	3,040	9	1	....	....	....	12	35	**	**	....	....	Charles S. Bobo, M.D., Dean	....	....	....
	OREGON		**100**	**3**	**21**	**2**	**2**								Sept. 13	May 2	117
117	University of Oregon, Med. Dept., Portland.—R.	109,884	72	2	14	1	2	41	31	147	123	97	58	S. E. Josephi, M.D., Dean	Oct. 5	May 29	118
118	Willamette University, Medical Dept., Salem.—R.	7,287	28	1	7	1	....	18	30	132	123	82	58	W. H. Byrd, M.D., Dean			
	PENNSYLVANIA		**2374**	**157**	**432**	**29**	**69**								Sept. 27	June 1	119
119	Hahnemann Med. Coll. and Hosp., Philadelphia.—H.	1,441,735	187	....	58	....	6	73	32	155	150	150	150	Herbert L. Northrop, M.D., Dean	Sept. 24	June 6	120
120	Jefferson Medical College, Philadelphia.—R.	1,441,735	591	....	139	....	12	120	34	180	180	180	180	James W. Holland, M.D., Dean	Sept. 24	June 6	121
121	Medico-Chirurgical College of Philadelphia.—R.	1,441,735	461	....	56	....	....	95	32	150	150	150	150	Seneca Egbert, M.D., Dean	Sept. 15	June 4	122
122	Temple University Med. Dept., Philadelphia.—R.	1,441,735	230	15	16	2	3	70	34	150	150	150	150	I. Newton Snively, M.D., Dean	Sept. 24	June 15	123
123	University of Penn., Dept. of Med., Philadelphia.—R	1,441,735	544	....	110	....	37	156	34	200	200	200	200	Charles H. Frazier, M.D., Dean	Sept. 22	June 1	124
124	Woman's Med. Coll. of Penn., Philadelphia.—R.	1,441,735	....	125	....	21	4	57	33	140	140	140	140	Clara Marshall, M.D., Dean	Oct. 5	June 15	125
125	University of Pittsburg, Med. Dept., Pittsburg.—R.	375,028	361	17	53	3	7	43	33	....	....	....	....	Thomas S. Arbuthnot, M.D., Dean	....	....	....
	PHILIPPINE ISLANDS		**212**	....	**34**	....	....								June 7	Feb. 26	126
126	Philippine Medical School, Manila.—R. (j)	219,928	52	....	8	....	....	42	35	....	....	....	....	Harry T. Marshall, M.D., Secretary	....	....	127
127	Univ. of St. Thomas, Faculty of Med., Manila.—R. (k)	219,928	160	....	26	....	....	154	35	....	....	....	....	Blas C. Alcuaz, Lic., Secretary	....	....	....
	SOUTH CAROLINA		**213**	....	**38**	....	....								Oct. 1	May 4	128
128	Medical College of South Dakota, Charlestown.—R.	56,317	213	....	38	....	....	31	28	100	100	75	75	Robert Wilson, Jr., M.D., Dean	Sept. 13	June 9	129
	SOUTH DAKOTA		**9**	**2**	....	....	....										
129	Univ. of So. Dakota, Coll. of Med., Vermilion.—R.	2,183	9	2	....	....	....	8	35	60	60	....	....	C. P. Lommen, B.S., Dean	Nov. 1	May 31	130
	TENNESSEE		**1712**	**14**	**402**	**4**	**42**								Oct. 1	May 1	131
130	Knoxville Medical College, Knoxville.—R.	36,051	22	1	6	1	2	11	26	45	40	45	50	H. M. Green, M.D., Secretary	Sept. 15	April 14	132
131	Tennessee Medical College, Knoxville.—R.	36,051	83	1	13	0	....	27	28	75	75	75	100	E. R. Zemp, M.D., Registrar	....	....	133
132	Meharry Medical College, Nashville.—R.	84,703	267	8	55	3	8	26	28	53	55	55	60	G. W. Hubbard, M.D., Dean	....	....	134
133	Univ. of Nashville, Med. Dept., Nashville.—R. (l)	84,703	228	....	61	....	10	....	....	....	....	....	....	....	....	....	....
134	Univ. of Tennessee, Dept. of Med., Nashville.—R. (l)	84,703	119	....	41	....	....	....	....	....	....	....	....	....	....	....	....
135	Universities of Nashville and Tennessee, Department of Medicine, Nashville.—R.	84,703	....	....	....	....	....	44	30	125	125	125	150	R. O. Tucker, M.D., Dean	Sept. 15	May 2	135
136	Vanderbilt University, Med. Dept., Nashville.—R.	84,703	209	....	49	....	....	45	30	130	130	130	155	William L. Dudley, M.D., Dean	Sept. 15	May 1	136
137	College of Physicians and Surgeons, Memphis.—R.	125,235	84	....	11	....	....	45	30	100	100	100	125	Heber Jones, M.D., Dean	Sept. 15	May 1	137
138	Memphis Hospital Medical College, Memphis.—R.	125,235	442	....	98	....	13	34	28	75	75	75	100	W. B. Rogers, M.D., Dean	Oct. 1	May 1	138
139	Univ. of West Tennessee, Med. Dept., Memphis.—R.	125,235	25	....	8	....	....	18	28	40	40	40	50	M. V. Lynk, M.D., Dean	Sept. 14	April 14	139
140	Chattanooga Medical College, Chattanooga.—R.	34,297	108	4	24	0	4	24	29	75	75	75	75	J. R. Rathmell, M.D., Dean	Sept. 22	May 2	140
141	Univ. of the South, Med. Dept., Sewanee.—R. (m)	500	125	....	36	....	5	32	28	....	....	....	....	John S. Cain, M. D., Dean	April 1, '09	Oct. 28, '09	141
	TEXAS		**420**	**12**	**80**	**1**	**2**								Sept. 15	May 2	142
142	Fort Worth University, Med. Dept., Ft. Worth.—R.	27,096	99	1	19	0	1	38	31	105	105	105	130	William R. Thompson, M.D., Dean	Sept. 27	May 13	143
143	University of Texas, Dept. of Med., Galveston.—R.	34,355	203	8	36	1	1	25	32	55	30	20	5	William S. Carter, M.D., Dean	Oct. 1	May 31	144
144	Baylor University, College of Medicine, Dallas.—R.	52,793	50	3	16	0	....	36	28	80	75	75	100	Edward H. Cary, M.D., Dean	Oct. 1	May 1	145
145	Southwestern University Medical College, Dallas.—R.	52,793	68	....	9	....	....	32	28	110	105	100	125	John O. McReynolds, M.D., Dean	Sept. 29	April 29	146
	UTAH		**17**	**1**	....	....	....								Sept. 16	June 1	147
146	Univ. of Utah, Dept. of Med., Salt Lake City.—R.†	61,202	17	1	....	....	....	21	34	65	65	....	....	Byron Cummings, A.M., Dean	....	....	....
	VERMONT		**166**	....	**33**	....	**4**								Nov. 10	June 29	148
147	University of Vermont, Coll. of Med., Burlington.—R.	21,070	166	....	33	....	4	56	30	130	125	125	150	James N. Jenne, M.D., Secretary	....	....	149
	VIRGINIA		**434**	....	**95**	....	**8**								Sept. 14	May 18	150
148	Medical College of Virginia, Richmond.—R.	87,246	206	....	35	....	3	48	32	100	100	100	130	Christopher Tompkins, M.D., Dean	Sept. 14	May 17	....
149	University College of Medicine, Richmond.—R.	87,246	140	....	42	....	5	75	32	100	100	100	100	A. L. Gray, M.D., Dean	Sept. 16	June 15	....
150	Univ. of Virginia, Dept. of Med., Charlottesville.—R.	6,449	88	....	18	....	....	42	36	150	140	120	100	Richard H. Whitehead, M.D., Dean	....	....	....

151	WEST VIRGINIA		40																151
	West Va. Univ., Coll. of Med., Morgantown.—R (a)	6,000	40	.....	.....	.....	.....	8	36	25	.....	.....	John N. Simpson, M.D., Dean	Sept.	20	June	15	152
	WISCONSIN		244	14	35	3	5												
152	Marquette University, Med. Dept., Milwaukee.—R.	317,903	157	9	20	3	3	96	30	135	135	150	Warren B. Hill, M.D., Dean	Oct.	5	May	23	153
153	Wisconsin Coll. of Phys. and Surg., Milwaukee.—R.	317,903	58	2	15	0	2	53	31	125	125	125	Thos. C. Phillips, M.D., Dean	Oct.	1	May	28	154
154	Univ. of Wisconsin, Coll. of Med., Madison.—R (o)	25,128	29	3				45	85	60	80	.....	Charles R. Bardeen, M.D., Dean	Sept.	27	June	22	
			1731	24	352	4	76												
	CANADA													Aug.	26	April	28	155
155	Dalhousie Univ., Halifax Med. Coll., Halifax, N. S.	50,000	57	4	8	0	....	27	32	....	....	.....	A. W. H. Lindsay, M.D., Secretary	Sept.	29	April	27	156
156	Queen's Univ., Faculty of Med., Kingston, Ont. (p)	17,961	208	....	40	....	7	26	30	100	100	100	A. R. B. Williamson, M.D., Secretary	Sept.	21	May	1	157
157	Western Univ., Faculty of Med., London, Ont.	48,000	104	....	25	....	5	30	30	100	100	100	W. E. Waugh, M.D., Registrar	Oct.	1	June	8	158
158	McGill University, Med. Faculty, Montreal, Q. (p)	400,000	328	....	71	....	18	95	33	138	148	154	John W. Scane, M.D., Registrar	Sept.	8	June	10	159
159	Laval University, Med. Faculty, Montreal, Q. (p)	400,000	214	....	44	....	32	50	35	110	118	126	E. P. Lachapelle, M.D., Dean	Sept.	15	June	20	160
160	Laval University, Med. Faculty, Quebec, Q. (p)	400,000	95	....	11	....	11	17	35	60	60	60	Laurent Catellier, M.D., Dean	Oct.	1	May	13	161
161	Univ. of Toronto, Med. Faculty, Toronto, Ont. (p)	328,911	611	10	80	1	....	140	30	150	150	150	A. Primrose, M.D., Secretary					
162	University of Manitoba, Manitoba Medical College, Winnipeg. (p)	105,000	111	1	36	0	3	40	20	130	125	125	H. H. Chown, M.D., Dean	Sept.	27	May	1	162

R, Regular; H, Homeopathic; E, Eclectic; Ph.M., Physiomedical; P, Panpathic.

REFERENCES TO TABLE 1

Heavy faced figures show totals by states.
* Night schools. ** No tuition is charged.
† Colleges giving only the first two years of the medical course.
(a) Now the Leland Stanford Junior University College of Medicine.
(b) Now the Los Angeles Medical Department of the University of California.
(c) For non-residents of Kansas the fees for each of the first two years are $70.
(d) The number of graduates given includes eight post-graduates.
(e) For non-residents of Michigan the total fees for each of the four years respectively are $130, $105, $105 and $65.
(f) Closed by the Board of Regents of the University of Minnesota, an elective chair each in materia medica and therapeutics in the College of Medicine and Surgery being substituted.
(g) Classes of 1910, 1911 and possibly 1912 will complete their work in the University of Minnesota College of Medicine and Surgery, but will obtain their degrees from Hamline University.
(h) These colleges have been suspended.
(i) These colleges have merged, forming the Ohio-Miami Medical College of the University of Cincinnati.
(j) The expenses of scholarship students including transportation, tuition and board are borne by the government.
(k) Number of students approximate; graduates given for 1908.
(l) These colleges have just merged, forming the Medical Department of the Universities of Nashville and Tennessee.
(m) Will be suspended after the close of the present session.
(n) Fees for non-residents of West Virginia are $50 per year.
(o) Non-residents of Wisconsin pay an additional fee of $50 per year.
(p) Total fees for the fifth year in the Canadian colleges are the same as for the fourth year.

(Continued from page 545)

III. CONDUCT OF THE COLLEGE.

1. The medical college should literally observe its published requirements for admission, tuition, time of attendance on the session and graduation, which it should definitely set forth, together with complete lists of its matriculates and annual graduates, in regular annual catalogues or announcements.

2. New medical colleges may be recognized on application if on examination they are found to comply with the above requirements.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership are as follows:

Preliminary Education: (*a*) A bachelor's degree from an approved college or university. (*b*) A diploma from an accredited high school, normal school or academy requiring for admission evidence of the completion of an eight-year course in primary and intermediate grades, and for graduation not less than four years of study embracing not less than two years (4 points) of Latin, two years (four points) of mathematics, two years (4 points) of English, one year (2 points) of history, one year (2 points) of physics, and six years (12 points) of further credit in language, literature, history or science. (*c*) An examination in the following branches totaling 30 points: A. Required (16 points): Mathematics (4 points), English (4 points), History (2 points), Latin (4 points), Physics (2 points).

B. Elective (14 points): English language and literature, 4 points; language, German, French, Spanish or Greek, in each not less than 2 points; solid geometry and trigonometry (½ year each), 2 points; biology (one year) or botany and zoology (½ year each), 2 points; chemistry (1 year), 2 points; physical geography and geology (½ year each), 1 point; physiology and hygiene (½ year each), 1 point; astronomy (½ year), 1 point; drawing (½ year), 1 point. One point in any subject in a high school or academic course demands not less than five periods per week of forty-five minutes each for eighteen weeks. (*d*) Certificates from reputable instructors recognized by any state board of medical examiners duly authorized by law or by the superintendents of public instruction in states having no board of examination, may be accepted in lieu of any part of this examination. (*e*) This examination must be conducted by or under the authority of the board of examiners or of the superintendent of public instruction of the city or state in which the college is located as provided for in subsection (*d*). In no case shall it be conducted by any person connected with the faculty, medical or otherwise, of the institution to which the student is seeking admission.

A student may be allowed to enter on his medical work conditioned in not more than six points, and these conditions must be removed by satisfactory examination before he is allowed to enter on the second year of his medical course.

Advanced Standing: Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the fourth year of their course, but no member shall admit a student to advanced standing without first communicating with the college from which such student desires to withdraw, and receiving from the dean of such college a direct written communication certifying to the applicant's professional and moral qualifications, and to the exact work he had done in said college.

CURRICULUM

	No. of Hours of Lectures.	Hours of Laboratory.	Hours of Clinics.	Total.
Histology	30	60	..	90
Embryology	30	60	..	90
Osteology	30	..	..	30
Anatomy	190	230	..	420
Physiology	180	120	..	300
Chemistry and Toxicology	100	200	..	300
Materia Medica	40	20	..	60
Pharmacology	40	20	..	60
Therapeutics	90	..	..	90
Bacteriology	40	100	..	140
Pathology	100	140	..	240
Medical Zoology, Postmortem Work and Clinical Microscopy	30	60	..	90
Physical Diagnosis	20	..	80	100
Practice of Medicine	180	..	360	540
Surgery	180	..	360	540
Obstetrics	100	..	60	160
Gynecology	50	..	110	160
Pediatrics	40	..	60	100
Eye and Ear	30	..	30	60
Nose and Throat	30	..	30	60
Mental and Nervous Diseases	60	..	60	120
Electro-Therapeutics	20	..	40	60
Genito-Urinary Diseases	30	..	30	60
Dermatology and Syphilis	20	..	20	40
Hygiene and Public Health	30	..	..	30
Dietetics	30	..	..	30
Medical Jurisprudence	30	..	..	30
	1,750	1,010	1,240	4,000

No time credit shall be given to holders of a Bachelor's degree, but subject credit can be given on satisfactory examination. Four years of residence in a medical college shall be required of all candidates for the degree of doctor of medicine.

Medical Education.—Candidates for the degree of Doctor of Medicine shall have attended four courses of study in four calendar

(Continued on page 552)

Number.	NAME OF COLLEGE	1 Alabama 687	2 Arizona....12	3 Arkansas 384	4 California 282	5 Colorado 150	6 Connecticut 263	7 Delaware 54	8 Dist. of Col....118	9 Florida 157	10 Georgia 659	11 Idaho 26	12 Illinois 1920	13 Indiana 610	14 Iowa 722	15 Kansas 387	16 Kentucky 497	17 Louisiana 456	18 Maine 174	19 Maryland 311	20 Massachusetts ...813	Number.
1	Birmingham Medical College.—	53	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1
2	University of Alabama, Med. Dept.—R	75	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2
3	College of Phys. and Surg., Little Rock.—R	....	3	56	....	....	....	....	....	....	....	....	....	....	....	....	....	6	....	....	....	3
4	University of Arkansas, Med. Dept.—R	1	....	143	....	....	....	....	....	....	....	....	2	1	1	1	1	7	....	....	....	4
5	Cooper Medical College.—R	....	....	....	72	....	....	....	....	....	....	....	....	2	5	2	1	....	1	....	2	5
6	University of California, Med. Dept.—R	....	....	....	33	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	6
7	Hahnemann Medical College of the Pacific.—H	....	....	....	23	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7
8	College of Phys. and Surg., San Francisco.—R	....	....	....	18	1	....	....	....	....	....	....	....	....	3	1	....	....	....	....	....	8
9	Oakland College of Medicine and Surgery.—R	....	....	....	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	9
10	Univ. of Southern California, Coll. of Med.—I	....	1	....	16	2	1	....	....	....	1	....	5	2	7	3	....	....	2	....	2	10
11	College of Phys. and Surg., Los Angeles.—R	....	1	....	4	....	....	....	....	....	....	....	1	2	3	....	1	....	....	....	1	11
12	California Eclec. Med. Coll., Los Angeles.—E	....	....	....	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12
13	Denver and Gross College of Medicine.—R	....	....	....	1	63	....	1	....	....	....	1	4	2	7	2	1	1	....	....	1	13
14	Denver Coll. of Physicians and Surgeons	....	....	....	....	27	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	14
15	University of Colorado, Medical Dept.—R	....	....	....	....	23	....	....	....	....	....	2	2	1	1	1	....	....	....	....	1	15
16	Yale Medical School, New Haven.—R	....	....	1*	....	....	01	....	....	....	....	....	3	....	....	1	....	....	....	....	6	16
17	George Washington Univ., Dept. of Med.—R	1	..	....	1	1	....	....	57	1	....	....	3	1	1	2	....	3	....	5	3	17
18	Georgetown University, School of Med.—R	1	..	....	3	....	3	1	23	....	....	....	3	....	....	....	....	....	....	3	3	18
19	Howard University, Medical Department.—R	1	..	1	....	....	1	3	19	8	9	....	3	1	....	....	....	5	....	12	3	19
20	Atlanta Col. of Phys. and Surg., Atlanta.—R	82	..	....	....	....	1	....	....	26	178	....	....	....	....	....	1	1	....	....	....	20
21	Atlanta School of Medicine.—R	26	1	....	....	....	....	....	....	19	89	....	....	....	....	....	....	4	....	....	1	21
22	Georgia Coll. of Eclectic Med. and Surg.—E	9	..	1	....	....	....	....	....	7	47	....	....	....	....	....	....	....	....	....	....	22
23	Hospital Medical College, Atlanta.—E	....	..	2	....	....	....	....	....	5	29	....	....	....	....	....	....	....	....	....	....	23
24	Medical College of Georgia, Augusta.—R	....	..	....	....	....	....	....	....	2	78	....	....	....	....	....	....	....	....	....	....	24
25	American Medical Missionary College.—R	1	..	....	1	....	....	....	....	....	1	....	4	3	2	1	....	....	....	....	....	25
26	Bennett Medical College.—R	1	..	....	....	1	2	....	....	1	....	....	99	7	4	1	4	....	....	....	....	26
27	Chicago College of Medicine and Surgery.—R	3	..	....	1	....	1	....	....	....	....	....	169	36	14	10	3	1	....	....	1	27
28	College of Med. and Surg., Chicago.—Ph.M.	....	..	....	....	....	....	....	....	....	....	....	13	4	3	1	....	....	....	....	1	28
29	College of Phys. and Surg., Chicago.—R	....	..	1	2	2	....	....	....	1	....	2	206	17	23	6	4	....	....	....	....	29
30	Hahnemann Med. Coll. and Hosp., Chicago. H	....	..	....	....	....	....	....	....	....	....	....	70	11	14	6	..	....	....	....	2	30
31	Hering Medical College, Chicago.—H	....	..	....	....	1	....	....	....	1	....	....	13	3	1	....	1	....	....	1	2	31
32	Illinois Medical College, Chicago.—R.†	....	....	....	....	....	....	....	....	....	....	....	33	22	....	....	1	1	....	....	....	32
33	Jenner Medical College, Chicago.—R	....	..	....	....	....	....	....	....	....	....	....	112	....	....	....	....	....	....	....	....	33
34	National Medical University.—P	....	..	....	....	....	....	....	....	....	....	....	50	....	....	....	....	....	....	....	....	34
35	Northwestern University Medical School.—R	1	..	1	6	7	....	....	....	....	2	3	268	31	59	20	3	2	....	....	....	35
36	Reliance Medical College.—R	....	..	....	....	....	....	....	....	....	....	....	83	....	....	....	....	....	....	....	....	36
37	Rush Medical College.—R	3	..	4	9	2	..	..	1	1	....	3	176	25	46	25	2	2	....	....	....	37
38	Indiana University, School of Medicine.—R	....	..	....	....	....	....	....	....	....	....	....	5	250	....	....	1	....	....	....	1	38
39	Physiomedical College of Indiana.—Ph.M.	....	..	....	....	....	....	....	....	....	....	....	....	19	....	....	....	....	....	....	....	39
40	Drake Univ. Coll. of Med., Des Moines.—R	....	....	....	....	....	....	....	....	....	....	....	20	1	75	3	....	....	....	....	....	40
41	Sioux City Coll. of Med., Sioux City.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	20	....	....	....	....	....	....	41
42	State Univ. of Iowa, Coll. of Med.—R	....	....	....	....	....	....	....	....	....	....	....	10	....	234	....	1	....	1	1	....	42
43	State Univ. of Iowa, Coll. of Homeo. Med.—H	....	....	....	....	....	....	....	....	....	....	1	1	....	34	....	....	....	....	....	....	43
44	Kansas Medical College, Topeka.—R	....	....	....	....	....	....	....	....	....	....	....	1	....	....	65	....	....	....	....	....	44
45	University of Kansas, School of Medicine.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	80	....	....	....	....	....	45
46	Western Eclec. Coll. of Med. and Surg.—E	1	....	2	....	1	....	....	....	....	....	....	2	....	3	10	1	....	....	....	....	46
47	Louisville Nat. Medical Coll., Louisville.—R	2	....	....	....	....	....	....	....	1	1	....	....	4	....	....	21	....	....	....	....	47
48	Southwestern Homeopathic Med. College.—H	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	8	....	....	....	....	48
49	University of Louisville, Med. Dept.—R	7	2	17	3	....	1	1	....	3	8	....	24	63	7	5	305	19	1	....	....	49
50	Flint Medical College.R.†	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	12	....	....	....	50
51	Tulane Univ. of Louisiana, Med. Dept.—R	55	..	10	....	....	1	....	....	6	11	....	....	....	....	....	....	204	1	....	....	51
52	Medical School of Maine.—R	....	..	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	69	....	4	52
53	Atlantic Medical College.—R.†	....	..	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	30	....	53
54	Baltimore Medical College.—R	1	..	2	3	....	27	....	3	1	....	....	1	....	1	....	....	1	9	27	37	54
55	College of Phys. and Surg., Baltimore.—R	1	..	....	....	....	19	2	....	....	2	....	....	....	....	1	....	....	....	31	18	55
56	Johns Hopkins Med. School, Baltimore.—R	7	..	4	11	1	15	1	3	2	10	....	8	6	4	4	8	4	4	41	6	56
57	Maryland Medical College.—R	....	..	....	....	....	2	2	1	....	1	....	1	2	....	....	1	....	1	21	2	57
58	University of Maryland, School of Med.—R	....	..	....	2	....	5	9	....	7	8	....	1	1	1	2	1	....	1	116	6	58
59	Woman's Medical College of Baltimore.—R	....	..	....	....	....	1	....	....	....	....	....	1	....	1	....	....	....	....	3	1	59
60	Boston University, School of Medicine.—H	....	..	....	1	....	....	....	....	....	....	....	2	....	1	....	....	....	5	....	61	60
61	College of Phys. and Surg., Boston.—R	....	..	....	2	....	3	....	....	1	....	....	....	....	....	....	....	....	7	....	86	61
62	Harvard Medical School, Boston.—R	....	..	1	10	3	4	....	1	....	....	....	5	3	3	2	3	....	13	1	59	62
63	Tufts College Medical School.—R	....	..	....	....	....	6	....	....	....	....	....	....	....	2	....	....	....	23	....	306	63
64	Detroit College of Medicine.—R	....	..	....	....	....	....	....	1	....	....	....	2	3	....	....	....	....	....	....	1	64
65	Detroit Homeopathic College, Detroit.—H	....	..	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	65
66	University of Michigan, Dept. of Med.—R	1	....	....	6	2	....	....	1	1	1	1	18	19	9	....	4	....	2	....	3	66
67	Univ. of Michigan, Homeopathic Coll.—H	....	....	....	....	....	....	....	1	....	....	....	1	3	1	1	....	1	....	....	....	67
68	Univ. of Minn., Coll. of Med. and Surg.—R	....	1	....	....	....	....	....	....	....	....	....	1	....	2	1	....	....	....	....	....	68
69	Univ. of Minn., Coll. of Homeo. M. and S.—H	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	69
70	Univ. of Mississippi, Med. Dept., Oxford.—	..	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1	2	....	....	....	70
71	Mississippi Medical College, Meridian.—R	5	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	71
72	Univ. of Missouri, Med. Dept., Columbia.—I	..	....	1	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	72
73	Kansas City Hahnemann Med. Coll.—H.†	....	....	....	1	....	....	....	....	....	....	....	2	1	3	16	....	....	....	....	....	73
74	University Medical College, Kansas City.—R	....	....	1	....	....	....	....	....	....	....	....	1	....	3	65	1	....	....	....	....	74
75	American Medical College, St. Louis.—E	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	75
76	Barnes Medical College, St. Louis.—R.†	....	....	4	....	....	....	....	....	....	....	....	32	1	1	4	4	1	....	....	....	76
77	Ensworth Medical College, St. Joseph.—R	....	....	....	....	....	....	....	....	....	....	1	....	....	8	12	....	....	....	....	....	77
78	Hippocratean College of Medicine.—R	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	78
79	Homeopathic Medical College of Missouri.—H	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	79
80	St. Louis University, School of Medicine.—R	1	....	4	....	2	....	....	....	....	....	3	61	4	13	6	1	2	....	1	....	80
81	St. Louis College of Phys. and Surg.—R	2	....	6	1	....	....	....	....	....	....	....	93	3	12	3	4	1	....	....	....	81
82	Washington Univ., Med. Dept., St. Louis.—R	1	....	4	....	....	....	....	....	....	1	1	43	2	4	1	2	....	1	1	....	82
83	John A. Creighton Medical College.—R	..	....	....	2	....	....	....	....	....	....	1	1	....	46	3	....	....	....	....	1	83
84	University of Nebraska, Coll. of Med.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	5	1	....	1	....	....	....	84
85	Lincoln Medical College, Lincoln.—E	....	....	....	....	1	....	....	....	....	....	....	....	1	1	1	....	....	....	....	....	85
86	Nebraska College of Medicine.—R	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	86
87	Dartmouth Medical School.—R	....	....	....	....	....	5	....	....	....	....	....	2	....	....	....	....	....	4	....	15	87
88	Albany Medical College.—R	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	9	88
89	Columbia Univ., Coll. of Phys. and Surg.—R	4	..	..	3	1	10	..	..	1	2	....	3	....	2	2	2	....	2	....	4	89
90	Cornell University Medical College.—R	....	..	..	1	....	1	....	....	....	....	....	1	1	1	....	....	1	1	....	6	90
91	Eclectic Med. Coll. of the City of New York.—I	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	91
92	Fordham University School of Medicine.—R	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	1	92
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

Number.	21 Michigan 491	22 Minnesota	23 Mississippi 55	24 Missouri 813	25 Montana 31	26 Nebraska 346	27 New Hampshire..103	28 New Jersey....451	29 New Mexico.....8	30 New York.....2123	31 Nevada 8	32 North Carolina...514	33 North Dakota....77	34 Ohio 929	35 Oklahoma 186	36 Oregon 116	37 Pennsylvania ...2150	38 Rhode Island.....99	39 South Carolina...393	40 South Dakota....87	41 Tennessee 537	42 Texas 751	43 Utah 75	44 Vermont 106	45 Virginia 482	46 Washington 89	47 West Virginia....271	48 Wisconsin 439	49 Wyoming 11	50 Hawaii, P.I.,P.R.83	51 Foreign 539	52 Totals 21,933	Number.
1	....	..	8	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	2	....	....	3	....	....	....	....	....	....	....	....	....	169	1
2	....	..	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	191	2
3	....	..	2	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	3	5	....	....	1	....	....	....	....	....	....	81	3
4	..	..	....	3	....	....	....	....	....	....	....	....	....	....	13	....	1	....	....	....	2	2	....	....	....	....	....	....	1	....	....	179	4
5	....	3	....	1	....	2	....	....	....	2	3	....	....	1	....	5	1	2	....	....	....	....	1	....	....	....	....	....	....	....	11	117	5
6	....	..	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	36	6
7	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	33	7
8	..	..	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	40	8
9	..	..	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	2	....	1	....	....	....	....	....	1	11	17	9
10	4	3	....	4	....	3	....	....	....	1	....	1	....	2	....	1	....	....	....	....	....	1	....	1	....	....	....	....	3	....	2	72	10
11	....	....	....	5	....	1	....	1	1	1	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	....	2	32	11
12	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7	12
13	..	1	....	....	2	2	....	....	....	3	....	....	....	4	....	....	4	....	1	....	....	1	2	....	3	....	....	....	1	1	....	....	109	13
14	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	....	34	14
15	2	....	1	....	....	1	....	....	....	3	....	....	....	5	....	....	1	....	....	....	....	1	....	....	....	....	....	....	....	1	....	....	54	15
16	1	....	....	2	....	....	....	1	....	12	....	....	....	....	....	1	4	2	....	....	....	2	....	....	2	....	....	....	....	3	....	3	141	16
17	2	....	....	1	....	1	1	1	....	10	....	5	1	4	4	....	9	1	4	....	3	....	1	2	11	....	5	....	....	....	10	156	17
18	....	....	1	....	....	....	....	2	....	7	....	1	....	2	1	....	9	5	....	....	....	....	....	....	6	1	2	3	....	....	9	89	18
19	....	....	4	4	1	....	....	5	....	6	....	6	....	6	....	....	11	2	7	....	3	....	....	....	28	....	4	....	....	47	....	205	19
20	....	....	4	....	....	....	....	....	....	4	....	4	....	....	2	....	1	..	20	....	1	....	....	....	1	....	....	....	....	....	....	280	20
21	....	....	7	1	....	....	....	....	....	1	....	12	....	....	....	....	....	..	13	....	1	2	....	....	1	....	2	....	....	....	1	281	21
22	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	..	....	....	....	1	....	....	....	....	....	....	....	....	....	66	22
23	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	..	2	....	1	2	....	....	....	....	....	....	....	....	....	43	23
24	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	16	....	....	1	....	....	1	....	....	....	....	....	....	99	24
25	10	....	1	1	....	....	....	....	....	5	....	....	....	6	....	....	2	..	1	....	1	....	....	....	1	....	....	....	....	....	....	60	25
26	5	2	....	4	....	1	....	1	....	12	....	1	....	3	2	....	10	..	1	5	....	....	....	....	....	1	....	1	....	....	19	186	26
27	18	12	4	9	....	3	....	....	....	14	....	....	5	17	2	....	28	1	..	3	....	3	3	....	....	....	4	15	....	....	16	396	27
28	1	1	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	..	....	12	....	3	....	....	....	....	....	....	....	....	1	33	28
29	17	14	....	11	2	8	....	....	....	3	....	1	7	12	1	1	..	....	1	....	....	2	4	....	....	6	1	31	....	7	13	517	29
30	3	3	....	1	....	....	....	....	....	1	....	....	....	3	....	....	2	..	....	....	....	....	....	....	1	1	1	3	....	....	7	130	30
31	2	....	1	2	....	....	....	....	....	2	....	....	....	....	....	....	1	..	....	....	....	1	....	....	....	....	....	2	1	....	5	40	31
32	....	....	....	....	....	....	....	....	....	....	....	1	....	3	....	....	1	..	....	....	....	....	....	....	....	....	....	....	....	....	....	62	32
33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	112	33
34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	150	34
35	14	27	1	8	6	17	....	....	....	5	....	....	10	20	1	2	2	..	....	15	4	4	10	....	....	8	....	39	1	3	21	621	35
36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
37	10	8	4	19	3	12	....	1	....	5	....	....	7	28	2	9	3	1	..	4	2	4	10	1	1	5	1	34	....	3	12	488	37
38	1	....	....	....	....	....	....	....	....	....	....	....	1	3	....	....	....	....	..	....	2	....	....	....	....	....	1	....	....	....	1	266	38
39	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	19	39
40	..	2	..	14	1	1	....	....	....	1	....	....	2	1	1	....	....	....	....	3	....	....	....	....	....	2	....	2	....	....	1	130	40
41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	29	41
42	..	3	....	2	2	2	....	1	....	....	....	....	1	....	....	1	....	....	....	5	....	....	....	....	....	....	....	....	....	....	....	....	....
43	..	..	....	1	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	1	....	2	....	....	....	266	42
44	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	42	43
45	....	....	....	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	68	44
46	..	..	....	8	....	4	....	....	1	....	....	....	....	3	8	....	....	....	....	....	....	4	....	....	....	1	....	....	....	....	....	90	45
47	..	..	2	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	2	....	....	....	1	....	1	....	....	....	1	50	46
48	..	..	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	1	....	....	....	....	....	1	....	1	....	....	....	2	40	47
49	2	8	26	24	1	1	....	4	1	6	....	5	....	7	3	2	13	....	5	....	20	29	....	2	12	....	61	2	....	....	6	706	49
50	..	..	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	24	50
51	....	....	85	....	....	....	....	....	....	....	....	2	....	2	2	....	....	....	4	....	6	41	....	....	1	....	....	....	....	....	8	439	51
52	....	....	....	....	....	....	2	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	3	81	52
53	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	8	....	....	....	....	....	....	....	1	....	....	....	....	....	....	43	53
54	....	....	....	....	....	1	7	22	....	53	....	2	....	3	....	....	53	5	2	....	1	1	....	1	11	1	15	....	....	16	307	54
55	....	....	....	....	1	....	....	22	....	20	....	3	....	13	....	....	36	17	....	....	1	....	1	....	6	....	41	....	....	17	252	55
56	....	1	1	9	1	1	3	6	....	20	....	9	....	14	....	3	28	1	7	....	3	10	....	....	9	8	4	6	1	....	4	207	56
57	....	....	....	....	....	....	....	3	....	47	....	1	....	1	....	....	18	....	1	....	....	....	....	....	4	....	18	....	....	....	8	97	57
58	....	1	....	2	....	....	1	11	....	11	....	33	....	2	1	....	26	4	20	....	1	....	....	1	21	....	9	....	....	8	17	329	58
59	....	....	....	....	....	....	....	1	....	2	....	1	....	....	....	....	....	....	1	....	....	....	....	....	1	....	1	....	....	5	1	20	59
60	....	....	....	....	....	....	3	....	....	4	....	....	....	2	....	1	2	....	....	....	....	....	....	4	....	....	....	....	....	....	5	95	60
61	....	....	1	....	....	....	4	....	....	8	....	....	....	....	....	....	....	7	....	....	....	1	....	1	2	....	2	....	....	....	47	172	61
62	2	1	....	1	....	2	8	2	....	10	....	3	....	6	1	3	5	12	1	....	....	1	....	....	....	1	....	....	2	....	13	285	62
63	....	1	....	....	....	....	17	....	1	1	....	....	....	2	....	....	....	17	....	....	....	....	....	....	....	....	....	....	....	....	5	384	63
64	112	1	....	....	....	....	....	....	....	3	....	....	....	3	....	....	4	....	....	....	....	....	....	3	....	....	....	1	....	1	29	161	64
65	30	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	34	65
66	189	5	....	4	3	2	....	1	....	34	1	2	2	38	....	2	18	1	3	9	....	2	1	2	1	1	....	4	....	1	7	404	66
67	33	1	....	....	....	1	....	....	....	24	....	....	....	7	....	....	3	....	....	2	1	....	....	....	....	....	1	....	....	....	....	81	67
68	....	207	....	....	....	....	....	....	....	1	....	....	14	....	....	....	1	....	....	7	....	....	....	1	....	2	....	7	....	....	....	245	68
69	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	69
70	....	....	23	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	27	70
71	....	....	96	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	102	71
72	..	....	....	40	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	47	72
73	1	....	....	14	....	1	....	....	....	1	....	....	....	....	....	....	1	....	....	1	1	....	....	....	....	1	....	1	....	....	1	46	73
74	....	....	....	75	1	1	....	....	1	....	....	....	....	....	10	....	1	....	....	....	....	....	....	....	....	1	....	1	....	....	2	164	74
75	....	....	....	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	28	75
76	....	....	....	68	....	1	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....	124	76
77	....	....	....	48	....	2	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	72	77
78	....	....	....	27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	31	78
79	....	....	....	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	15	79
80	3	2	....	104	....	1	....	....	....	3	....	....	....	5	7	....	1	....	1	....	....	4	2	....	....	....	....	6	....	....	6	243	80
81	..	....	....	81	1	2	....	....	....	2	2	....	1	....	8	....	....	....	....	....	....	10	....	....	....	....	....	1	....	....	1	234	81
82	..	....	1	118	....	1	....	....	....	2	....	....	....	1	5	....	....	....	....	....	3	....	....	....	....	1	....	3	....	1	4	201	82
83	4	4	....	2	....	94	....	....	....	1	....	....	1	2	....	1	1	....	....	6	....	....	1	....	....	1	....	5	....	....	....	177	83
84	....	....	....	....	....	113	....	....	....	....	....	....	....	....	1	....	....	....	....	3	1	....	....	....	....	....	....	....	2	....	....	122	84
85	....	....	....	....	....	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	42	85
86	....	....	....	....	....	23	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	26	86
87	....	....	....	....	....	....	25	2	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....	58	87
88	....	....	....	....	....	....	1	2	....	164	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	180	88
89	....	3	1	3	1	....	1	35	....	86	....	4	2	3	1	3	8	1	2	....	....	3	....	....	....	2	1	2	....	1	....	312	89
90	..	....	....	....	1	1	..	22	....	66	....	....	....	4	....	1	3	....	....	....	....	1	....	....	1	....	....	....	....	....	13	217	90
91	..	..	..	....	..	..	..	13	..	83	..	..	..	..	....	..	....	....	..	....	....	....	....	....	....	....	....	....	....	1	8	96	91
92	..	..	..	..	..	..	..	1	..	33	..	..	..	..	....	..	1	....	..	....	....	....	....	....	....	....	....	....	....	....	....	43	92
	21	22	23	24	25	26	9	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

Number.	NAME OF COLLEGE	1 Alabama 687	2 Arizona 19	3 Arkansas 384	4 California 282	5 Colorado 150	6 Connecticut 263	7 Delaware 54	8 Dist. of Col.....118	9 Florida 157	10 Georgia 650	11 Idaho 26	12 Illinois 1920	13 Indiana 610	14 Iowa 722	15 Kansas 387	16 Kentucky 497	17 Louisiana 156	18 Maine 174	19 Maryland 311	20 Massachusetts ..81	Number.
93	Long Island College Hospital.—R	....	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	1	364	93
94	New York Homeo. Med. Coll. and Hosp.—H.†	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....	94
95	New York Med. Coll. and Hosp. for Women.H	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	95
96	University and Bellevue Hosp. Med. Coll.—R.	....	....	....	3	2	9	....	....	1	....	....	3	....	....	....	1	....	....	1	5	96
97	Syracuse University, College of Medicine.—R.	....	....	....	1	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	97
98	University of Buffalo, Medical Department.—R	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	98
99	Leonard Medical School, Raleigh.—R	10	....	....	....	....	....	....	2	9	5	....	....	....	....	....	....	1	....	2	1	99
100	University of North Carolina, Med. Dept.—R.	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	100
101	North Carolina Medical College.—R	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	101
102	Wake Forest School of Med., Wake Forest.—R	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	102
103	University of North Dakota, Med. Dept.—R.	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	103
104	Cleveland College of Phys. and Surg.—R.	....	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	104
105	Cleveland Homeopathic Medical College.—H.†	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	105
106	Western Reserve University, Med. Dept.—R.	....	....	....	....	....	....	....	....	....	....	....	1	9	2	....	....	....	....	....	....	106
107	Eclectic Medical Institute.—E	....	....	2	....	1	1	....	....	....	1	....	5	7	....	1	6	....	....	....	....	107
108	Medical College of Ohio.—R	....	....	....	....	....	....	....	....	....	....	....	....	5	....	1	15	....	....	....	....	108
109	Miami Medical College.—R	....	....	....	....	....	....	....	....	....	....	....	1	2	....	....	7	....	....	....	....	109
110	Pulte Medical College—H	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	110
111	Starling-Ohio Medical College—R	....	....	....	....	....	....	....	....	....	....	....	1	2	2	....	1	....	....	....	....	111
112	Toledo Medical College.—R	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	112
113	Epworth University, Coll. of Med.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	113
114	University of Oklahoma, School of Med.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	114
115	University of Oregon, Medical Dept.—R	....	....	....	2	....	....	....	....	....	....	4	....	....	1	....	....	....	....	....	....	115
116	Willamette University, Medical Dept.—R	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	116
117	Hahnemann Med. Coll. and Hosp., Phila.—H.	....	....	....	1	....	3	3	....	....	....	....	2	....	4	....	4	....	4	2	1	117
118	Jefferson Medical College.—R	4	1	5	4	1	11	13	....	....	8	....	7	4	7	2	4	....	1	....	9	118
119	Medico-Chirurgical Coll. of Philadelphia.—R.†	....	....	....	1	....	6	8	1	....	....	1	....	2	....	....	1	1	....	2	2	119
120	Temple University, Medical Department.—R.	1	....	....	....	....	1	2	....	....	2	....	2	1	1	....	....	....	....	2	2	120
121	University of Pennsylvania, Dept. of Med.—R.	5	....	3	2	....	4	5	....	2	3	....	3	6	5	....	....	2	3	2	10	121
122	Woman's Medical College of Pennsylvania.—R.	....	....	1	2	1	2	....	....	....	1	....	....	1	1	2	2	1	3	..	2	122
123	University of Pittsburg, Med. Dept.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	123
124	Medical College of the State of South Carolina	....	....	....	....	....	....	....	....	15	1	....	....	....	....	....	....	....	....	....	....	124
125	University of South Dakota, Coll. of Med.—R.	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	125
126	Knoxville Medical College, Knoxville.—R	1	....	....	....	....	....	....	....	1	1	....	....	....	....	1	1	..	....	....	1	126
127	Tennessee Medical College, Knoxville—R	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	9	..	....	....	....	127
128	Meharry Medical College, Nashville.—R	90	....	17	....	....	....	....	....	2	33	....	4	3	....	3	5	10	....	....	....	128
129	Univ. of Nashville, Med. Dept., Nashville.—R.	26	....	9	....	1	....	....	....	7	2	....	4	....	....	....	11	28	....	....	....	129
130	University of Tennessee, Dept. of Med.—R.	12	....	2	1	....	....	....	....	2	1	....	3	....	1	....	8	7	....	....	....	130
131	Vanderbilt Univ., Med. Dept., Nashville.—R.	29	....	7	2	....	....	....	....	3	2	1	2	2	....	....	20	10	....	....	....	131
132	College of Phys. and Surg., Memphis.—R	2	....	6	....	1	....	....	1	....	....	....	2	....	....	....	....	2	....	....	....	132
133	Memphis Hospital Medical College.—R	16	....	53	....	....	....	....	....	3	....	....	2	....	....	1	3	93	....	....	....	133
134	University of West Tennessee, Med. Dept.—R.	3	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	134
135	Chattanooga Medical College, Chattanooga.—E	30	....	....	2	....	....	....	....	7	8	....	1	1	....	....	....	....	....	....	1	135
136	University of the South, Med. Dept.—R.	23	....	7	....	....	....	....	1	3	5	....	....	....	....	....	2	13	....	3	1	136
137	Fort Worth University, Med. Dept.—R.	1	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	1	....	....	....	137
138	University of Texas, Dept. of Med.—R.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	138
139	Baylor University, College of Medicine.—R.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	139
140	Southwestern Univ. Med. Coll., Dallas.—R.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	140
141	University of Utah, Dept. of Medicine.—R.	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	141
142	University of Vermont, College of Med.—R.†	....	....	....	....	....	8	....	....	....	....	....	....	....	....	....	....	....	13	....	19	142
143	Medical College of Virginia, Richmond.—R.	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	143
144	University College of Medicine, Richmond.—R.	1	....	....	....	....	....	....	....	1	2	....	....	....	....	....	1	....	....	1	....	144
145	University of Virginia, Dept. of Med.—R.	7	....	2	....	....	....	1	1	1	2	....	....	....	....	1	....	1	....	2	2	145
146	West Virginia University, Coll. of Med.—R.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	146
147	Marquette University, Medical Department.—R	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	1	....	....	....	....	147
148	Wisconsin College of Phys. and Surg.—R.	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	148
149	University of Wisconsin, Coll. of Med.—R.	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	149
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

* Figures for 1907-8. † Figures exact; distribution based on that for 1907-8.

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years, each annual course to have been of not less than thirty teaching weeks' duration, and at least ten months shall intervene between the beginning of any course and the beginning of the preceding course. No time credit shall be given to holders of a Bachelor's degree, but subject credit may be given on satisfactory examination. Four years of residence in a medical college shall be required of all candidates for the degree of doctor of medicine.

The entire course of four years shall consist of at least 4,000 hours, divided into the subjects as shown in the opposite table, and no college shall be recognized that falls below this standard over 20 per cent. in any one branch or over 10 per cent. in the total. Laboratory or clinic hours may be substituted for didactic hours.

Each student shall be obliged to attend 80 per cent. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent., or its equivalent, in any other marking system. And no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

A college which gives less than a four years' course of study, but does not graduate students, and is possessed of other required qualifications, may be admitted to membership.

Each medical college in membership in the Association shall print in every annual catalogue or announcement a table of the total number of hours work given in said college, arranged both by subjects and years.

The following colleges are members of the association: College of Physicians and Surgeons, Los Angeles, Cal.; Leland Stanford Junior University College of Medicine, Palo Alto and San Francisco, Cal.; University of California, Medical Department, Berkeley, Los Angeles, and San Francisco, Cal.; University of Colorado, School of Medicine, Boulder, Colo.; Denver and Gross College of Medicine, Denver, Colo.; George Washington University Department of Medicine, Washington, D. C.; Georgetown University School of Medicine, Washington, D. C.; Howard University Medical Department, Washington, D. C.; American Medical Missionary College, Battle Creek, Mich., and Chicago, Ill.; College of Physicians and Surgeons, Chicago, Ill.; Indiana University School of Medicine, Bloomington and Indianapolis, Ind.; Drake University College of Medicine, Des Moines, Iowa.; State University of Iowa, College of Medicine, Iowa City, Iowa; Kansas Medical College, Topeka, Kan.; University of Kansas School of Medicine, Lawrence, Kan.; University of Louisville, Medical Department, Louisville, Ky.; Baltimore Medical College, Baltimore, Md.; College of Physicians and Surgeons, Baltimore, Md.; Johns Hopkins University, Medical Department, Baltimore, Md.; University of Maryland School of Medicine, Baltimore, Md.; Woman's Medical College, Baltimore, Md.; Tufts College Medical School, Boston, Mass.; Detroit College of Medicine, Detroit, Mich.; University of Michigan, Department of Medicine and Surgery, Ann Arbor, Mich.; University of Mississippi Medical Department, Oxford, Miss.; University of Missouri Department of Medicine, Columbia, Mo.; University Medical College, Kansas City, Mo.; St. Louis University Medical Department, St. Louis, Mo.; Washington University Medical Department, St. Louis, Mo.; Washington University Medical Department, St. and Omaha, Neb.; University of Buffalo, Medical Department, Buffalo, N. Y.; University and Bellevue Hospital Medical College, New York, N. Y.; Cornell University Medical College, New York, N. Y.; University of North Carolina Medical Department, Chapel Hill, N. C.; Wake Forest College School of Medicine, Wake Forest, N. C.; University of North Dakota Medical Department, University, N. D.; Cleveland College of Physicians and Surgeons, Cleveland,

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Number.	21 Michigan 491	22 Minnesota 347	23 Mississippi 503	24 Missouri 813	25 Montana 31	26 Nebraska 346	27 New Hampshire..103	28 New Jersey....451	29 New Mexico....8	30 New York....2123	31 Nevada 8	32 North Carolina..514	33 North Dakota....77	34 Ohio 929	35 Oklahoma 186	36 Oregon 116	37 Pennsylvania ..2159	38 Rhode Island....99	39 South Carolina..393	40 South Dakota....87	41 Tennessee 537	42 Texas 751	43 Utah 75	44 Vermont 106	45 Virginia 482	46 Washington 89	47 West Virginia....271	48 Wisconsin 430	49 Wyoming 14	50 Hawaii, P.I., P.R.83	51 Foreign 539	52 Totals 21,933	Number.
93	....	....	....	....	....	....	2	34	....	322	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	1	93
94	1	....	....	....	....	....	....	23	....	75	....	....	....	....	....	....	4	....	....	....	....	1	....	1	....	....	....	....	....	....	2	109	94
95	....	....	....	....	....	....	....	....	....	24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	24	95
96	....	....	....	....	....	....	1	69	....	332	....	....	....	2	....	1	3	3	....	....	1	....	1	1	1	2	....	....	....	....	3	445	96
97	....	....	....	....	....	....	....	2	....	136	....	....	....	1	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	5	149	97
98	....	....	....	....	....	....	....	....	....	172	....	....	....	....	....	....	9	....	....	....	....	1	....	....	....	....	....	....	....	....	2	185	98
99	....	....	1	1	....	....	....	....	....	2	....	41	....	....	1	....	3	....	12	....	1	5	....	....	19	....	1	....	....	....	8	125	99
100	....	....	....	....	....	....	....	....	....	4	....	101	....	....	....	....	3	....	3	....	....	....	....	....	....	....	....	....	....	....	1	113	100
101	....	....	....	....	....	....	....	....	....	2	....	81	....	....	....	....	1	....	6	....	....	1	....	....	....	....	....	....	....	....	2	94	101
102	....	....	....	....	....	....	....	....	....	....	....	48	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	53	102
103	....	3	....	....	....	....	....	....	....	....	....	....	15	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	22	103
104	2	....	....	....	....	....	....	....	....	....	....	....	....	82	....	....	3	....	....	....	1	....	....	....	....	....	....	....	....	....	2	92	104
105	1	....	....	....	....	....	....	1	....	3	....	....	....	26	....	....	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	41	105
106	1	....	....	....	....	....	....	....	1	3	....	....	....	68	....	....	11	....	....	1	....	....	....	....	....	....	1	1	....	....	....	98	106
107	....	....	....	2	....	1	....	1	....	1	....	....	....	28	....	....	7	....	....	....	....	1	....	....	....	1	15	....	....	....	....	81	107
108	....	....	....	....	....	....	1	....	....	1	....	....	....	93	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	2	120	108
109	1	....	....	....	....	....	....	....	....	....	....	....	....	61	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	73	109
110	....	....	....	....	....	....	....	....	....	....	....	....	....	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	16	110
111	1	....	....	....	....	1	....	....	....	....	....	....	....	216	....	....	4	....	....	....	....	....	....	1	....	....	1	....	....	....	1	231	111
112	1	....	....	....	....	....	....	....	....	....	....	....	....	33	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	38	112
113	....	....	....	....	....	....	....	....	....	1	....	....	....	....	44	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....	51	113
114	....	....	....	....	....	....	....	....	....	....	....	....	....	....	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	10	114
115	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	46	....	....	....	....	....	....	....	....	....	18	....	....	....	....	2	74	115
116	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	24	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	29	116
117	....	1	....	1	....	....	....	26	....	10	....	....	....	5	....	....	112	....	....	....	....	....	....	....	....	....	....	2	....	....	6	187	117
118	2	11	4	1	1	2	1	40	....	5	....	31	3	14	....	3	339	4	3	1	2	4	10	1	2	6	8	2	....	....	10	501	118
119	1	1	....	....	....	....	....	39	1	9	....	....	1	3	....	....	335	1	....	....	....	....	5	....	....	1	....	1	....	....	38	461	119
120	....	....	....	....	....	....	....	14	....	3	....	1	1	1	....	....	204	1	1	....	....	....	1	....	....	....	....	....	....	....	4	245	120
121	1	3	2	2	....	....	1	32	....	20	....	15	....	17	....	....	340	2	3	....	2	6	3	1	6	3	2	2	....	1	25	544	121
122	1	1	....	1	....	....	....	5	....	11	....	1	....	3	....	2	57	1	1	....	1	2	....	....	1	1	....	....	....	....	17	125	122
123	....	....	....	....	....	....	....	....	....	1	1	....	....	4	....	....	368	....	....	....	....	....	....	....	....	....	4	....	....	....	....	378	123
124	....	....	....	....	....	....	....	1	....	....	....	2	....	....	....	....	....	....	194	....	....	....	....	....	....	....	....	....	....	....	....	213	124
125	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	7	....	....	....	....	....	....	....	....	....	....	....	11	125
126	....	1	3	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	1	....	5	1	1	....	1	1	....	....	....	....	1	23	126
127	....	....	....	....	....	....	....	....	....	....	....	7	....	....	....	....	....	....	....	....	58	....	....	....	7	1	1	....	....	....	....	84	127
128	....	....	37	13	....	....	....	....	....	....	....	7	....	1	6	....	2	....	15	....	30	41	....	....	2	....	2	....	....	....	13	275	128
129	....	....	27	1	....	....	....	....	....	2	....	10	....	1	6	....	....	....	9	....	72	7	....	....	3	....	1	....	....	....	1	225	129
130	....	....	7	....	....	....	....	1	....	....	....	3	....	....	2	....	....	....	1	....	58	9	....	....	1	....	....	....	....	....	....	119	130
131	2	....	18	5	....	....	....	....	....	1	....	....	....	....	4	....	....	....	6	....	77	17	....	....	....	1	....	....	....	....	....	200	131
132	....	....	33	1	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	33	1	....	....	....	....	....	....	....	....	....	84	132
133	....	....	142	2	....	....	....	....	....	....	....	....	....	1	12	1	....	....	1	....	66	45	....	....	1	....	....	....	....	....	....	442	133
134	....	....	4	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	10	1	....	....	....	....	....	....	....	....	1	25	134
135	2	....	4	....	....	....	....	....	....	1	....	7	....	....	5	....	1	....	....	....	29	3	....	....	6	....	4	....	....	....	....	119	135
136	....	....	11	....	....	....	....	....	....	1	....	4	....	....	4	....	1	....	4	....	14	15	....	....	7	....	3	....	....	....	2	125	136
137	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6	....	....	....	....	....	1	86	....	....	....	....	....	....	....	....	....	100	137
138	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	210	....	....	....	....	....	....	....	....	1	211	138
139	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	1	49	....	....	....	....	....	....	....	....	....	53	139
140	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	68	....	....	....	....	....	....	....	....	....	68	140
141	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	17	....	....	....	....	....	....	....	....	18	141
142	....	....	....	....	....	....	24	....	1	20	....	....	....	1	....	....	1	3	....	....	....	....	....	73	....	....	....	....	....	....	3	106	142
143	....	1	....	....	....	....	....	1	....	2	....	17	....	....	....	....	1	....	6	....	3	1	....	....	160	....	12	....	....	....	....	206	143
144	....	....	....	....	....	....	....	2	....	1	....	33	....	....	....	....	1	....	2	....	....	....	....	....	89	....	4	....	....	2	....	140	144
145	....	....	4	....	....	....	....	....	....	1	....	4	....	....	....	1	2	....	3	....	....	1	....	....	49	....	3	....	....	....	....	88	145
146	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	4	....	....	....	....	....	....	....	....	....	33	....	....	....	....	40	146
147	8	1	....	....	....	....	....	....	....	....	....	....	2	1	....	....	....	....	....	....	....	....	....	....	....	....	....	170	....	....	....	166	147
148	....	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	54	....	....	....	60	148
149	....	1	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	27	....	....	....	32	149
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

(Continued from page 552)

Ohio; Western Reserve University Medical College, Cleveland, Ohio; Starling-Ohio Medical College, Columbus, Ohio; State University of Oklahoma School of Medicine, Norman, Okla.; Meharry Medical College, Nashville, Tenn.; Vanderbilt University, Medical Department, Nashville, Tenn.; Medical College of Virginia, Richmond, Va.; University College of Medicine, Richmond, Va.; University of West Virginia Medical Department, Morgantown, W. Va.; Marquette University Medical Department, Milwaukee, Wis.; University of Wisconsin College of Medicine, Madison, Wis.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 1764 Lexington street, Chicago.

SOUTHERN MEDICAL COLLEGE ASSOCIATION

The following requirements for admission to the freshman year are exacted by the colleges belonging to this Association:

The student must possess a diploma of graduation from some literary or scientific institution of learning, or a certificate that he has passed the entrance examination to a university, or a certificate from some legally constituted high school. The minimum preliminary education required by the Southern Medical College Association is a grammar school education and two years' successful attendance at a recognized preparatory school or a high school, or its equivalent, said equivalent to be determined by a superintendent of public instruction. A student may be given one month from date of his admission to submit his certificate of qualification. And if he fails to possess the requisite educational qualifications in one or more branches, he may matriculate and attend his first course of lectures, but must present the requisite certificate before matriculating in the second course, and all tickets or certificates in such cases must have the conditions printed plainly on the face of each. Beginning with the session of 1910-11 nothing less will be accepted than a diploma from an accredited high school as published in the catalogue of each state university, or its equivalent, such equivalent to be determined by the county or state superintendent of public instruction.

Colleges belonging to this Association are not to issue certificates of credit to any student who has not been in actual attendance on at least 80 per cent. of a seven months' medical course, nor to allow advanced standing on credentials representing less than that amount of work. No student is to be allowed to graduate unless he has been in actual attendance on at least 80 per cent of a seven months' session immediately preceding said graduation.

The following colleges are members:

Medical College of Alabama, Mobile, Ala.; Birmingham Medical College, Birmingham, Ala.; Medical Department University of Arkansas, Little Rock, Ark.; College of Physicians and Surgeons, Little Rock, Ark.; Atlanta College of Physicians and Surgeons, Atlanta, Ga.; Medical College of Georgia, Augusta, Ga.; Medical Department, University of Mississippi, Oxford, Miss.; Medical Department, Epworth University, Oklahoma, Okla.; Medical Department, University of Tennessee, Nashville, Tenn.; Medical Department, University of Nashville, Nashville, Tenn.; Memphis Hospital Medical College, Memphis, Tenn.; Chattanooga Medical College, Chattanooga, Tenn.; Tennessee Medical College, Knoxville, Tenn.; Medical Department, Fort Worth University, Fort Worth, Texas; Medical Department, Baylor University, Dallas, Texas; Medical Department, Southwestern University, Dallas, Texas.

The secretary-treasurer is Dr. Lewis C. Morris, Birmingham, Ala.

(Continued on page 554)

TABLE 3.—WHERE STUDENTS STUDY MEDICINE

A. STUDENTS FROM THE EASTERN STATES

Eastern States.	Year.	Attending Medical Schools in the East. Students.	East. Percentage.	Middle States. Students.	Middle States. Percentage.	West. Students.	West. Percentage.	South. Students.	South. Percentage.	Totals.
Connecticut	1908	264	96.7	6	2.2	0	0.	3	1.1	273
	1909	255	97.0	5	1.9	1	0.4	2	0.7	263
Delaware	1908	52	98.1	1	1.9	0	0.	0	0.	53
	1909	53	98.1	0	0.	1	1.9	0	0.	54
Dist. of Col.....	1908	117	96.0	2	1.6	1	0.8	2	1.6	122
	1909	159	92.4	4	3.4	0	0.	5	4.2	118
Maine	1908	172	94.5	6	3.3	2	1.1	2	1.1	182
	1909	155	94.8	5	2.9	3	1.7	1	0.6	174
Maryland	1908	236	95.5	6	2.4	1	0.5	4	1.6	247
	1909	302	97.1	4	1.3	0	0.	5	1.6	311
Massachusetts .	1908	835	97.4	15	1.7	4	0.5	3	0.4	857
	1909	789	97.0	12	1.5	7	0.9	5	0.6	813
New Hampshire	1908	113	95.0	4	3.4	1	0.8	1	0.8	119
	1909	102	99.0	1	1.0	0	0.	0	0.	103
New Jersey	1908	426	94.2	18	4.0	2	0.5	6	1.3	452
	1909	438	97.1	10	2.2	1	0.3	2	0.4	451
New York	1908	1978	93.5	105	5.0	8	0.4	25	1.1	2116
	1909	1959	92.3	133	6.3	12	0.5	19	0.9	2123
Pennsylvania ...	1908	1920	91.3	155	7.4	4	0.2	25	1.1	2104
	1909	2005	92.9	130	6.0	11	0.5	13	0.6	2159
Rhode Island ...	1908	92	92.9	5	5.1	0	0.	2	2.0	99
	1909	94	94.9	3	3.1	2	2.0	0	0.	99
Vermont	1908	93	87.8	10	9.4	3	2.8	0	0.	106
	1909	95	89.6	7	6.6	4	3.8	0	0.	106
Virginia	1908	448	86.0	14	2.7	0	0.	59	11.3	521
	1909	410	85.1	17	3.5	3	0.6	52	10.8	482
West Virginia ..	1908	190	65.1	89	30.5	0	0.	13	4.4	292
	1909	168	62.0	89	32.8	0	0.	14	5.2	271
Totals	1908	6936	92.0	436	5.8	26	0.3	145	1.9	7543
	1909	6944	92.3	420	5.6	45	0.5	118	1.6	7527

B. STUDENTS FROM THE MIDDLE STATES

Middle States.	Year.	Attending Medical Schools in the East. Students.	East. Percentage.	Middle States. Students.	Middle States. Percentage.	West. Students.	West. Percentage.	South. Students.	South. Percentage.	Totals.
Illinois	1908	55	3.1	1651	94.4	14	0.8	29	1.7	1749
	1909	54	2.8	1832	95.4	14	0.8	20	1.0	1920
Indiana	1908	23	3.2	680	94.6	9	1.2	7	1.0	719
	1909	29	4.8	565	92.6	9	1.5	7	1.1	610
Iowa	1908	26	3.6	676	94.4	8	1.1	6	0.9	716
	1909	35	4.8	658	91.1	27	3.7	2	0.4	722
Kansas	1908	26	5.6	418	89.9	3	0.6	18	3.9	465
	1909	20	5.2	349	90.2	9	2.3	9	2.3	387
Kentucky	1908	33	5.2	541	85.2	0	0.	61	9.6	635
	1909	28	5.6	401	80.7	6	1.2	62	12.5	497
Michigan	1908	24	4.9	457	92.7	4	0.8	8	1.6	493
	1909	11	2.2	470	95.7	6	1.4	4	0.7	491
Minnesota	1908	21	5.7	350	94.3	0	0.	0	0.	371
	1909	25	7.2	313	90.2	7	2.0	2	0.6	347
Missouri	1908	26	2.8	851	92.6	9	1.0	33	3.6	919
	1909	27	3.4	743	91.4	12	1.3	31	3.9	813
Nebraska	1908	12	3.6	317	95.5	2	0.6	1	0.3	332
	1909	8	2.3	329	95.1	9	2.6	0	0.	346
North Dakota..	1908	6	7.9	70	92.1	0	0.	0	0.	76
	1909	8	10.4	68	88.3	1	1.3	0	0.	77
Ohio	1908	140	15.3	756	82.9	5	0.6	11	1.2	912
	1909	116	12.5	792	85.3	13	1.4	8	0.8	929
South Dakota..	1908	3	4.2	66	93.0	0	0.	2	2.8	71
	1909	1	1.1	86	98.9	0	0.	0	0.	87
Wisconsin	1908	22	4.6	450	94.2	2	0.4	4	0.8	478
	1909	18	4.2	407	94.7	5	1.1	0	0.	430
Totals	1908	417	5.3	7283	91.8	56	0.6	180	2.3	7936
	1909	380	5.0	7013	91.6	118	1.5	145	1.9	7656

C. STUDENTS FROM THE WESTERN STATES

Western States.	Year.	Attending Medical Schools in the East. Students.	East. Percentage.	Middle States. Students.	Middle States. Percentage.	West. Students.	West. Percentage.	South. Students.	South. Percentage.	Totals.
Arizona	1908	1	6.7	4	26.7	2	13.3	8	53.3	15
	1909	1	8.3	3	25.0	2	16.7	6	50.0	12
California	1908	55	13.5	39	9.6	306	75.0	8	1.9	408
	1909	52	18.4	33	11.7	192	68.1	5	1.8	282
Colorado	1908	9	5.8	28	17.9	117	75.0	2	1.3	156
	1909	10	6.7	21	14.0	116	77.3	3	2.0	150
Idaho	1908	2	8.3	17	70.9	5	20.8	0	0.	24
	1909	1	3.8	16	61.6	8	30.8	1	3.8	26
Montana	1908	8	18.6	32	74.4	1	2.3	2	4.7	43
	1909	6	19.4	21	67.7	4	12.9	0	0.	31
New Mexico	1908	2	18.2	3	27.3	2	18.2	4	36.3	11
	1909	3	37.5	4	50.0	1	12.5	0	0.	8
Nevada	1908	1	12.5	3	37.5	3	37.5	1	12.5	8
	1909	1	12.5	3	37.5	4	50.0	0	0.	8
Oregon	1908	22	16.8	15	11.5	92	70.2	2	1.5	131
	1909	19	16.4	19	16.4	77	66.3	1	0.9	116
Utah	1908	35	35.4	34	34.3	29	29.3	1	1.0	99
	1909	22	29.3	32	42.7	20	26.7	1	1.3	75
Washington	1908	26	25.2	47	45.7	26	25.2	4	3.9	103
	1909	29	32.8	36	40.4	21	23.6	3	3.4	89
Wyoming	1908	1	16.7	4	66.7	1	16.7	0	0.	6
	1909	3	21.4	5	35.7	5	35.7	1	7.2	14
Totals	1908	162	16.1	226	22.5	584	58.2	32	3.2	1004
	1909	147	18.1	193	23.8	450	55.5	21	2.6	811

D. STUDENTS FROM THE SOUTHERN STATES

Southern States.	Year.	Attending Medical Schools in the East. Students.	East. Percentage.	Middle States. Students.	Middle States. Percentage.	West. Students.	West. Percentage.	South. Students.	South. Percentage.	Totals.
Alabama	1908	36	5.3	24	3.5	0	0.	623	91.2	683
	1909	34	5.0	24	3.4	0	0.	629	91.6	687
Arkansas ...	1908	20	4.8	60	14.3	0	0.	339	80.9	419
	1909	20	5.2	47	12.2	0	0.	317	82.6	384
Florida	1908	19	14.4	9	6.8	0	0.	104	78.8	132
	1909	27	17.2	9	5.7	0	0.	121	77.1	157
Georgia	1908	51	7.8	17	2.6	1	0.1	586	89.5	655
	1909	50	7.6	15	2.2	1	0.2	503	90.0	659
Louisiana ...	1908	19	3.9	30	6.2	0	0.	438	89.9	487
	1909	20	4.4	31	6.8	1	0.2	404	88.6	456
Mississippi .	1908	16	2.7	39	6.5	1	0.4	547	90.4	603
	1909	18	3.0	40	6.7	1	0.2	544	90.1	603
No. Carolina	1908	158	31.5	13	2.5	2	0.4	329	65.6	502
	1909	170	33.1	11	2.1	1	0.2	332	64.6	514
Oklahoma ...	1908	8	5.3	41	27.0	1	0.7	102	67.0	152
	1909	8	4.3	55	29.6	0	0.	123	66.1	186
So. Carolina	1908	73	21.3	9	2.6	0	0.	261	76.1	343
	1909	66	16.8	12	3.0	1	0.3	314	79.9	393
Tennessee ..	1908	19	3.1	45	7.3	1	0.1	552	89.5	617
	1909	21	3.9	38	7.1	0	0.	478	89.0	537
Texas	1908	41	4.7	113	12.9	3	0.4	717	82.0	874
	1909	39	5.2	76	10.1	7	0.9	629	83.8	751
Totals	1908	460	8.4	400	7.3	9	0.1	4598	84.2	5467
	1909	473	8.9	358	6.7	12	0.3	4474	84.1	5317
Average 1908 and 1909 Migrating Students	A	6940	92.1	428	5.7	36	0.4	131	1.8	7535
	B	398	5.1	7148	91.7	87	1.1	163	2.1	7796
	C	155	17.1	209	23.0	517	56.9	27	3.0	908
	D	466	8.8	379	6.9	11	0.2	4536	84.1	5392
		1019	40.9	1016	40.8	134	5.4	321	12.9	2490

(Continued from page 553)

AMERICAN INSTITUTE OF HOMEOPATHY

The minimum requirements for entrance into the freshman class of all homeopathic medical colleges, as adopted in 1901, are, with abbreviation, as follows:

1. English Composition.—Exercise on assigned theme, not less than 200 words. Exercise in reading. Exercise in correction of ungrammatical sentences.

2. Mathematics.—Arithmetical exercises in (a) vulgar fractions, (b) decimals, (c) percentage, (d) proportion, (e) square and cube root, (f) weights and measures, (g) decimal system. Mensuration —(a) Definition of terms, (b) exercises under the more fundamental rules.

3. Geography.—General facts about North America.

4. History.—General, with particular reference to human progress in art, science and letters. (The examination to avoid exact dates and minor details.)

5. Latin Language.—(a) Grammar, (b) four books of Cæsar or its equivalent.

The colleges recognized as in good standing by this organization are:

Hahnemann Medical College of the Pacific, San Francisco, Cal.; Denver College of Physicians and Surgeons, Denver, Colo.; Hahne-

(Continued on page 555)

mann Medical College, Chicago.; Hering Medical College; Homeopathic Medical Department of the State University of Iowa; Southwestern Homeopathic College, Louisville, Ky.; Boston University School of Medicine; Homeopathic Medical College of University of Michigan; Detroit Homeopathic College; Kansas City Hahnemann Medical College; New York Homeopathic Medical College; New York Medical College for Women; Cleveland Homeopathic Medical College; Pulte Medical College, Cincinnati; Hahnemann Medical College of Philadelphia.

The secretary is Dr. J. Richey Horner, 655 Rose Bldg., Cleveland, Ohio.

NATIONAL CONFEDERATION OF ECLECTIC MEDICAL COLLEGES

The following are the present minimum requirements for admission to colleges members of this Association:

1. A certificate of good moral character.
2. Diploma of graduation from (a) a four years graded high school, or (b) normal school, or (c) seminary, or (d) literary or scientific college, or (e) university, or (f) evidence of having passed the matriculation examination to a recognized literary or scientific college, or (g) a medical student's certificate secured by examination from a state medical board.

The following colleges are members of this Association:

American Medical College, St. Louis, Mo.; California Eclectic Medical College, Los Angeles, Cal.; Eclectic Medical College of the City of New York, New York, N. Y.; Eclectic Medical Institute, Cincinnati, Ohio; Georgia College of Eclectic Medicine and Surgery, Atlanta, Ga.; Lincoln Medical College, Lincoln, Neb.; Western Eclectic College of Medicine and Surgery, Kansas City, Kan.

The secretary-treasurer is John K. Scudder, M.D., 1009 Plum street, Cincinnati, Ohio.

COLLEGE NOTES

New Colleges.—Besides the two new colleges formed by mergers, one new college was organized at Atlanta, Georgia, the Hospital Medical College, Eclectic.

Colleges Discontinued.—Besides the six colleges which have lost their identity through mergers during the past year, four colleges have been suspended. These are the College of Homeopathic Medicine of the University of Minnesota, abolished by the Board of Regents, the Homeopathic Medical College of Missouri of St. Louis, the Nebraska College of Medicine of Lincoln, and the College of Physicians and Surgeons of Dallas, Texas. The Medical Department of the University of the South will be discontinued after Oct. 28, 1909.

Statistics of Canadian Colleges.—Statistics of the eight Canadian medical colleges are given in the last eight lines of Table I. There were 1,755 medical students, including 24 women students and 346 graduates, including 4 women. Seventy-six, or 22 per cent. of all graduates were reported also to hold degrees in arts or science. This percentage is doubtless somewhat low since complete reports were not obtained in this respect from the University of Toronto. All the Canadian schools give courses of five years, this standard now being required for license in some of the Canadian provinces.

Colleges Merged.—During the past year mergers have taken place in four instances. At Cincinnati, the Medical College of Ohio and the Miami Medical College, completed their union, forming the Ohio-Miami Medical College of the University of Cincinnati. At Nashville, the University of Nashville Medical Department and the University of Tennessee Department of Medicine have united, the new school to be known as the Universities of Nashville and Tennessee Medical Department. The Keokuk Medical College, College of Physicians and Surgeons, Keokuk, Iowa, was absorbed by Drake University College of Medicine of Des Moines. The University of Southern California College of Medicine of Los Angeles was taken over by the University of California and will be operated as the Los Angeles medical department.

Confusion of Titles.—At the last meeting of the Association of American Universities, an effort was made to bring about a uniformity in the use of the terms "department," "course," "college," and "school" in the titles of educational institutions so as to have a definite meaning for each. The committee which was appointed to take up the matter made the following recommendations:

1. That the term *department* be restricted to the various subjects taught in the university; as, for instance, the department of Latin, department of mathematics, department of physics, etc.

2. That the term *course* be restricted to the subdivisions of a subject; as, for instance, course in English.

3. That the term *college* be restricted to a part of the university the standard of admission to which is the equivalent of that required by the Carnegie Foundation for the Advancement of Teaching and which offers instruction leading to a first degree in arts, letters or sciences.

4. That the term *school* be restricted to a part of the university, the standard of admission to which is not less than the equivalent of two-years' work in the college and which offers instruction of not less than two-years' duration leading to a technical or professional degree.

Higher Preliminary Requirements.—Seventeen medical colleges already require two or more years of collegiate work for admission in addition to a four year high school education. These colleges and the years when such requirement began are as follows:

College	Began
Johns Hopkins University Medical Department	1893
Harvard Medical School	1900
Western Reserve University, Medical Department	1901
University of Chicago, Rush Medical College	1904
University of California, Medical Department	1905
University of Minnesota, Coll. of Med. and Surg.	1907
University of North Dakota, College of Medicine	1907
University of Wisconsin, College of Medicine	1907
Cornell University Medical College	1908
Wake Forest College, School of Medicine	1908
Leland Stanford Junior University, Department of Medicine	1909
Yale Medical School	1909
*Northwestern University Medical School	1909
*University of Kansas, School of Medicine	1909
University of Michigan, College of Medicine	1909
*University of Nebraska, College of Medicine	1909
University of South Dakota, College of Medicine	1909

*One year required for the session of 1908-9.

Eleven other colleges have definitely announced an increase in their entrance requirements to two years of collegiate work. These and the dates when such requirements will become effective are as follows:

College	Begins
University of Colorado, School of Medicine	1910
*Indiana University School of Medicine	1910
*State University of Iowa, College of Medicine	1910
Drake University, College of Medicine	1910
†University of Missouri, Department of Medicine	1910
John A. Creighton Medical College	1910
Dartmouth Medical School	1910
Columbia University, College of Physicians and Surgeons	1910
*Syracuse University, College of Medicine	1910
*University of Pennsylvainia, Medical Department	1910
*University of Utah, Medical Department	1910

*One year required for the session of 1909-10.
†One year has been required since 1906.

The twenty-one following colleges either already require one year of work in a college of liberal arts in addition to a four-year high school course, or have announced their intention to do so on or before the year given:

College	In Force
Fordham University, School of Medicine	1908
University of North Carolina, Medical Department	1909
Oakland College of Medicine and Surgery	1910
Denver and Gross College of Medicine	1910
College of Physicians and Surgeons, Chicago	1910
Hahnemann Medical College, Chicago	1910
Kansas Medical College	1910
Tulane University of Louisiana, Medical Department	1910
St. Louis University School of Medicine	1910
Washington University, Medical Department	1910
University of Cincinnati, Medical Department	1910
Starling-Ohio Medical College	1910
Cleveland College of Physicians and Surgeons	1910
University of Oklahoma School of Medicine	1910
University of Oregon, Medical Department	1910
Vanderbilt University, Medical Department	1910
University of Texas, Medical Department	1910
*University of Virginia, Department of Medicine	1910
West Virginia University, College of Medicine	1910
Marquette University Medical Department	1910
Wisconsin College of Physicians and Surgeons	1910

*Requires a three-year high school course plus one year of college work.

Several other colleges were previously listed as having adopted higher requirements. A few have since rescinded their action, six have merged into other colleges, and others, on inspection, being found unsatisfactory, were omitted from the lists. The schools above named, however, have made definite statements regarding the increase in their entrance requirements and doubtless mean what they say.

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[For other information see second page following reading matter]

SATURDAY, AUGUST 14, 1909

MEDICAL EDUCATION IN THE UNITED STATES

STATISTICS FOR THE COLLEGE YEAR 1908-9

The tabulated statistics herewith presented (pages 546 to 554) are for the year ending June 30, 1909, and are based on signed reports received directly from the medical colleges, or from other reliable sources. We wish here to acknowledge the courtesy and cooperation of the officials of the medical colleges which have made the compilation of these complete statistics possible.

STATISTICS OF COLLEGES

On pages 546 to 549 is Table 1, which gives all the colleges in session during 1908-9, the population of the city in which each college is located, the number of students, men and women, registered during the year, the number of 1909 graduates, men and women, the number of graduates holding collegiate degrees, the number of teachers for each college, the number of weeks of actual work in the college year, the total fees for each year, the executive officer of the college and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 531 are given essential facts of all medical colleges, arranged by states, and on pages 549 to 555 the requirements and membership of the different college associations.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (matriculants) in the United States for the year ending June 30, 1909, excluding special students, was 22,145, a decrease of 457 below 1908 and a decrease of 2,131 below 1907. It is the lowest number since THE JOURNAL began compiling these statistics in 1900. Of the total number of students, 20,554 were in attendance at the regular colleges, 899 at the homeopathic, 413 at the eclectic, 52 at the physiomedical, and 227 at the unclassifiable colleges. The attendance at the regular colleges shows a decrease of 382 below that of last year, of 1,649 below 1907 and of 2,562 below 1906. In the homeopathic colleges there was an increase of 9 over the attendance of 1908, but a decrease of 140 below the attendance of 1907. The eclectic colleges show a decrease of 66 since 1908, of 132 below 1907 and of 231 below 1906. The physiomedical colleges had 52 this year, as compared with 90 in 1908 and 97 in 1907.

TABLE 4.—MEDICAL COLLEGE ATTENDANCE

Year.	Regular.	Homeopathic.	Eclectic.	Physio Med.	Nondescript.	Total.
1880	9,776	1,220	830	.....	.....	11,826
1890	13,521	1,164	719	.....	.....	15,404
1900	22,710	1,909	522	.....	.....	25,171
1901	23,846	1,683	664	80	144	26,417
1902	24,878	1,617	765	91	150	27,501
1903	24,930	1,498	848	149	190	27,615
1904	25,632	1,300	1,014	123	234	28,142
1905	24,119	1,104	578	114	232	26,147
1906	23,116	1,085	644	110	249	25,204
1907	22,303	1,039	545	97	292	24,276
1908	20,936	891	479	90	206	22,602
1909	20,554	899	413	52	227	22,145

GRADUATES

The total number of graduates for the year ending June 30, 1909, was 4,442, a decrease of 299 below 1908, a decrease of 538 below 1907, and of 922 below 1906. The percentage of graduates to matriculants was 20.1, as compared with 21.0 in 1908 and 20.5 in 1907. The number of graduates from the regular colleges was 4,090, or 280 less than in 1908 and 501 less than in 1907. From the homeopathic colleges there were 209 graduates, or 6 less than in 1908 and 16 less than in 1907. The eclectic colleges graduated 84, or 32 less than last year and 37 less than in 1907. The physiomedical colleges had 15 graduates this year, as compared with 12 last year and 11 in 1907.

TABLE 5.—MEDICAL COLLEGE GRADUATES

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1880	2,673	380	188	.....	.....	3,241
1890	3,853	380	221	.....	.....	4,454
1900	4,715	413	86	.....	.....	5,214
1901	4,879	387	148	18	12	5,444
1902	4,498	336	138	16	11	4,999
1903	5,088	420	149	24	17	5,698
1904	5,190	371	146	20	20	5,747
1905	5,126	276	153	22	23	5,600
1906	4,841	286	186	22	29	5,364
1907	4,591	225	121	11	32	4,980
1908	4,370	215	116	12	28	4,741
1909	4,090	209	84	15	44	4,442

Of the 4,442 medical graduates, 692, or 15.6 per cent., were reported to hold also degrees in arts or science, as compared with 820 (17.3 per cent.) in 1908, and 903 (18 per cent.) in 1907. It is expected that in future the percentage of college graduates will increase rather than decrease, since more medical schools are requiring some college work for admission.

WOMEN IN MEDICINE

During the past year there were 921 women studying medicine, an increase of 86 over 1908, but 7 less than in 1907. The percentage of all medical students was 4.2, as compared with 3.7 per cent. last year. There were 162 women graduates this year, or 3.7 per cent. of all graduates. In 1908 there were 835 women students and 185 graduates, while in 1907 there were 928 women students and 211 graduates. Of all the women matriculants, 169 (18.4 per cent.) were in attendance at the 3 medical colleges for women, as compared with 186 (22.3 per cent.) in 1908 and 210 (22.6 per cent.) in 1907. From the 3 women's colleges, there were 33, or 20.3 per

cent., of all women graduates, as compared with 46 (24.9 per cent.) in 1908. The remaining 752 (81.6 per cent.) were matriculated in coeducational colleges.

TABLE 6.—WOMEN IN MEDICINE

Year.	Total women students.	Percent. of all students, both sexes.	Total women graduates.	Percent. of grads., both sexes.	Women's colleges.	Students.	Percent. of all women students.	Graduates.	Percent. of all women graduates.	Co-ed. schools.	Students.	Percent. of women students.	Graduates.	Percent. of all women graduates.
1904	1,129	4.3	244	4.0	3	183	16.2	56	23.0	97	946	83.8	198	77.0
1905	1,073	4.1	219	4.0	3	221	20.6	54	24.5	96	852	79.4	165	75.5
1906	895	3.5	233	4.3	3	189	21.0	33	14.1	90	706	79.0	200	85.9
1907	928	3.8	211	4.2	3	210	22.6	39	18.5	86	718	77.4	172	81.5
1908	835	3.7	185	3.9	3	186	22.3	46	24.9	88	649	77.7	139	75.1
1909	921	4.2	162	3.7	3	169	18.4	33	20.3	91	752	81.6	128	79.7

NUMBER OF COLLEGES

During the past year 11 colleges (mentioned on page 555) have either suspended or have merged into others and 3 new colleges were established, making a net decrease of 8 colleges since last year, the total now being 144. The regular colleges number 117, a decrease of 6 since last year. The homeopathic colleges number 14, a decrease of 2. Of the eclectic colleges, during the year, one changed to regular, but one new college was organized, leaving 8, the same number as last year. There are still 2 physiomedical colleges and 3 schools which are unclassifiable since they offer to teach two or more systems of medicine.

TABLE 7.—MEDICAL COLLEGES

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1880	72	12	6	.....	.....	90
1890	93	14	9	.....	.....	116
1900	121	22	8	.....	.....	151
1901	124	21	10	2	2	159
1902	121	20	10	3	1	155
1903	121	19	10	3	1	154
1904	133	19	10	3	1	166
1905	129	18	9	3	1	160
1906	130	18	9	3	1	161
1907	131	17	8	3	2	161
1908	123	16	8	2	3	152
1909	117	14	8	2	3	144

The total number of colleges which have ceased to exist through mergers or otherwise since 1904 is 45. During the same time, however, 23 new colleges have been organized, leaving a net decrease of 22. While the total number of colleges is smaller, the percentage of higher-grade, stronger medical colleges has been considerably increased.

LENGTH OF TERMS

The length of term of each college fluctuates somewhat from year to year, but on the whole during the last six years there has been a decided lengthening of college terms. This has reference to the weeks of actual work, exclusive of holidays. Four colleges this year report sessions shorter than twenty-seven weeks, as compared with 2 last year and 6 in 1907. In 1901 there were 58 which held sessions of less than twenty-seven weeks. Of those having sessions of twenty-seven or twenty-eight weeks, he number is 17 this year, or 4 less than last year and 29 less than in 1903. There are 23 colleges claiming courses of twenty-nine or thirty weeks of actual work and 51 claiming courses of thirty-one or thirty-two weeks. The 3 colleges claiming courses longer than thirty-six weeks are night schools. It would doubtless require twelve or fourteen years of the usual night-school study, however, to secure the equivalent of four years of thirty weeks each in the better day colleges. Ninety-nine, or 68 per cent. of all colleges, require from thirty-one to thirty-six weeks, as compared with 64 per cent. last year.

TABLE 8.—COLLEGE TERMS

Year.	23 to 26 weeks.		27 to 28 weeks.		29 to 30 weeks		31 to 32 weeks.		33 to 34 weeks.		35 to 36 weeks.		Ov. 36 weeks	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1902	44	28.4	44	28.4	11	7.1	33	21.3	3	1.9	18	11.6	2	1.3
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.4	2	1.3
1904	37	16.3	44	26.5	22	13.3	37	22.3	13	7.8	20	12.0	3	1.8
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	38	23.8	3	1.9
1906	14	8.7	35	21.7	26	16.1	32	19.9	24	14.9	28	17.4	3	1.8
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3
1908	2	1.3	21	13.8	28	18.4	51	33.6	24	15.8	22	14.5	4	2.6
1909	4	2.3	17	11.6	23	16.4	51	34.9	18	12.3	30	20.5	3	2.0

TUITION AND OTHER FEES

Special attention is called this year in Table 1 to the total amount charged by the various colleges for tuition, matriculation, laboratory and graduation fees *per annum* for each student. For the 139 colleges from which complete information was received regarding fees, various amounts are changed as follows:

Total Fees.	Colleges.
$ 50 or less	7
50 to $ 75	11
75 to 100	37
100 to 125	36
125 to 150	19
150 to 175	17
175 to 200	7
200 or above	5

Only 18 charge fees less than $75 *per annum*, among these appearing the state universities of Colorado, Iowa, Missouri, North and South Dakota, Oklahoma and Wisconsin, where there is charge only for matriculation and laboratory fees, no tuition being required. The others are schools for colored students. The highest number, 37, is of the colleges charging from $75 to $100, and there are 36 which charge from $100 to $125, making 73 colleges charging fees ranging from $75 to $125 per year. There are 36 colleges having fees of $125 to $175 per year and 12 having fees of $175 or above. The 5 colleges having the highest fees are Johns Hopkins University Medical Department, Harvard Medical School, University and Bellevue Hospital Medical College, Columbia University College of Physicians and Surgeons and the Medical Department of the University of Pennsylvania. The highest fees, ranging from $250 to $275, are charged by Columbia University College of Physicians and Surgeons.

From a knowledge based on an actual inspection of all medical schools, it can be stated that among those colleges charging low fees are to be found a fair number of medical colleges of high grade, while, on the other hand, some colleges of low rank charge high fees. From the monetary standpoint, therefore, there is no reason why a student of limited means should attend a low-grade medical college. The figures here given are particularly interesting in the light of the facts already made known[1] that, in the twenty-five leading medical colleges, to teach each student in the freshman and sophomore years costs the colleges from $250 to $700 or even more each year.

DISTRIBUTION OF MEDICAL STUDENTS

Table 2 on pages 550 to 554 shows from what states the students come who were in attendance at each medical college during the session of 1908-9. The influence of the proximity of the medical school is seen in the fact that states having medical colleges contribute more students in proportion to the population than those which have no colleges. A comparison of this table with the large tables based on state board examinations[2] which show the distribution of the alumni of each college, is interesting. The college whose alumni are widely distributed usually has a student body from an equally large number of states.

Only two states contributed over 2,000 students each this year, these being Pennsylvania with 2,159 and New York with 2,123. Illinois contributed 1,920. The next states in the order of the number of students contributed are Ohio, 929; Massachusetts and Missouri, each, 813; Texas, 751, and Iowa, 722. Four states have less than 20 each, these being Wyoming, 14; Arizona, 12; Nevada, 8, and New Mexico, 8. There were 83 students from Hawaii, Porto Rico and the Philippine Islands and 539 students from foreign countries.

MIGRATION OF MEDICAL STUDENTS

Table 3 has been prepared to show the number of students of each section of the country which attend medical schools of that section and the number which attend medical colleges of other sections. Section A gives the figures for students from the eastern states; Section B, for students from the middle states; Section C, for students from the western states, and Section D, for students from the southern states. Figures are given for the two college years, 1907-8 and 1908-9. The differences in the figures for the two years show the fluctuation due to the exit of the graduating class, to the ingress of the new freshmen and to the comparatively few which during the year left the colleges of one section and went to colleges of another section. At the bottom of Section D the average totals for the two years are given. Percentages are given in order to permit of comparisons. The eastern section has long held the largest place in medical education and, as would be expected, still has the smallest percentage of students leaving to attend colleges of other sections, the percentage of those remaining in the eastern section being 92.1. The middle states are a close second, with 91.7 per cent. of their own resident students studying medicine in that section. The western section, having the smallest number of colleges, naturally has a larger proportion of students attending colleges in other sections. Of the students who migrate from the middle and southern sections, the largest proportions go east, while of those from the western section the largest proportion attends colleges of the middle section. Altogether 2,490 students attended colleges outside of the section in which they lived. Of this number, 1,019, or 40.9 per cent., went to the eastern section; 1,016, or 40.8 per cent., went to the middle section; 321, or 12.5 per cent., went to the southern section, and 134, or 5.4 per cent, went to the western section.

PRESENT STATUS IN MEDICAL EDUCATION

Attention should be drawn to the demoralizing influence of medical sects, particularly osteopathy, which have secured special legislation in a number of states. This is more fully discussed in another column.[3] A careful study of the entire field of medical education, however, shows that marked progress has been made, due chiefly to the action of the medical faculties themselves, which, recognizing the need of higher and better enforced standards, have made great sacrifices and gone to much expense to bring about the desired end. As is noted in another column,[4] there are 24 colleges which after this fall will be requiring one or more years of collegiate work for admission. Numerous mergers have been brought about, better equipped laboratories have been provided, better trained teachers have been employed and increased endowments secured. There is, indeed, a bright outlook for the future of medical education.

THE SCIENCE OF CLINICAL MEDICINE

The development of medicine during the past twenty-five years has resulted in the separation of anatomy, pathologic anatomy, physiology, physiologic chemistry and pharmacology as distinct branches of medicine, which formerly constituted a unit. Each of these subjects is now generally recognized as a pure science and has its quota of able men devoting their best energies to the further advancement of that science.

In this issue of THE JOURNAL, Dr. S. J. Meltzer calls attention to the growing demand for the separation of another branch from the mother-stem—the division of the science of clinical medicine from the practice of medicine. Such separation seems necessary, since the two divisions of medicine are necessarily incompatible. Clinical research desires to delve into the unknown to

1. THE JOURNAL, June 19, 1909, page 2046.
2. THE JOURNAL, May 22, 1909, pages 1698 to 1713.
3. This issue, page 582.
4. This issue, page 555.

seek for new truths, while practice cares chiefly for things of already proved value in diagnosis or treatment. As Dr. Meltzer points out, for the scientific side of clinical medicine utility only obscures vision and retards progress, while in the practice of medicine utility is of chief consideration. Furthermore, the research side needs scientific men whose time is devoted to the following up of details now seemingly unimportant, and sufficient time is not available for those engaged in active practice.

The responsibility for this work cannot well be left with the anatomist, the physiologist or the pathologist, who with few exceptions have little conception of the clinical problem, for as a rule they are not clinically trained. The longer they work at their special branches and the older they become, the wider as a rule becomes the gap between the hospital wards and their laboratories. The development of the scientific side of clinical medicine, therefore, would tend to lessen the breach between the so-called scientific and so-called practical sides of medicine, and, as Dr. Christian points out,[1] will insure that "the physician of the future is both scientifically and practically trained in laboratory methods, but none the less a keen observer of his patients and so an able clinician in the truest sense."

The proposed separation would be clearly beneficial for both divisions of medicine. The development of the scientific side of clinical medicine would attract men of marked ability whose work would doubtless soon bring out new methods of diagnosis and treatment, thereby adding to the resources of the practitioner. While much has already been done through research in physiology, physiologic chemistry and pharmacology, how much more can be done if able men, trained in scientific methods, devote their lives to the further development of clinical methods! If it is to hold its place in the present rapid progress being made in the sciences of medicine, it is apparent that the scientific side of clinical medicine should be separated from active practice.

THE INFLUENCE OF THE CARNEGIE FOUNDATION ON MEDICAL EDUCATION

Science and higher education in this country have been placed under lasting obligation to Mr. Andrew Carnegie by his endowment of the two great institutions that bear his name—the Carnegie Institution of Washington and the Carnegie Foundation for the Advancement of Teaching. The first is devoted wholly, or practically so, to active investigation in other fields than the purely medical, the founder and his advisers believing that the needs of medical investigation would be well cared for in other ways. The Carnegie Institution, however, supports the *Index Medicus* and thus renders a most important and direct service to medicine of greater influence than is perhaps sufficiently appreciated by many in and out of the medical profession. If that unique publication, which is the only index of the current medical literature of the world that we have, were allowed to go under it would be a most lamentable loss to medicine. The number of periodicals now is so large that without such index it would be utterly impossible for our writers and investigators to keep adequately in touch with the additions constantly made to medical knowledge in all civilized countries. It is hoped that the trustees of the Carnegie Institution may have become so impressed with the great usefulness of the *Index Medicus* in promoting the growth of medical knowledge that no doubt will arise as to the wisdom of its continuance.

The Carnegie Foundation for the Advancement of Teaching, the influence of which on medical education it seems desirable to emphasize at this time, was established in order to provide retiring allowances and pensions for teachers in colleges and universities in this country and Canada. Of course, this does not mean every institution that calls itself college or university. In addition to fulfilling certain more or less obvious requirements, an institution in order to be acceptable must be non-sectarian. At first state universities also were excluded, but a little more than a year ago the endowment was increased by $5,000,000 in order that the benefits of the fund might be extended to state universities. A large proportion of the universities that participate in this pension system maintain medical departments, and members of their medical faculties that follow medical teaching as a career are as fully entitled, and as freely admitted, to pensions as members of other faculties. Already not a few medical teachers have retired on Carnegie allowances. The Carnegie Foundation consequently stands for the advancement of medical teaching to quite the same degree as it stands for the advancement of teaching in other branches.

This provision for pensions for medical teachers will help medical education because the career as medical teacher thereby naturally becomes more attractive to the right sort of men. Relieved in a measure from financial responsibility in case of disability from sickness and old age, the medical scholar will feel himself freer to devote himself unreservedly to his teaching and investigation than otherwise would be the case. As yet only a relatively small part of the total number of our medical schools derive direct benefit from this pension fund, and this number unfortunately can not be expected to be increased speedily by reason of the self-evident limitations of so many of our schools, every one of which we all know should be acceptable to the foundation so far as the character of the work done is concerned. Our efforts to raise the standards must not cease until such is the case.

But the Carnegie Foundation is a factor of great importance to medical education for other reasons, as well. It is evident that the work of the institutions that are admitted to the benefits of a pension system of this kind must be kept up to a reasonable standard. The officers and experts of the foundation must assure them-

1. Columbia University Quarterly, June, 1909, page 341.

selves that such is the case. By virtue of this fact the foundation not only feels, as it were, a special and direct interest in the work of a number of our medical schools, but must concern itself with the broad subject of medical education in general, as well. We have abundant evidence that this interest is actual.

According to current reports, the medical work is investigated with the same thoroughness as other phases of the institutions in which the foundation has become interested, and as a result undesirable conditions and shortcomings have been brought to light which call for change and improvement. Noteworthy forward steps, especially in the line of consolidation of medical schools, have received effective encouragement from the Carnegie Foundation. From time to time we may expect that the foundation will find it expedient also to carry out comprehensive investigations of all the medical schools in the country so as to be able better to judge of the trend of development. If the results of expert work along these lines were given full publicity much good would surely come of it to medical education in general. The actual facts would be more helpful in the end than the poetry of the medical school catalogues and advertisements, especially to state licensing boards, some of which maintain altogether too much indifference in regard to the character of the schools that send them applicants for license. It is evident that on account of its unique relation the Carnegie Foundation, wisely managed, may exert a powerful and growing influence for good on the development of medical education in this country.

OUR COLLEGES AND THE TUBERCULOSIS CAMPAIGN

An unusually interesting and important phase of the tuberculosis campaign, dealing with the work carried on at our colleges and universities against this disease, is presented in a paper by W. H. Norton[1] read before the recent International Congress of Tuberculosis at Washington, D. C. Since the tuberculosis question has resolved itself largely into one of education of the masses our educational institutions necessarily will occupy an important place in its solution. For them to carry on or aid in this fight they need first-hand instruction in questions concerning especially hygiene and sanitation. In many of our higher institutions, courses are now being given in the class-room by competent and trained specialists, amplified by work of a more practical character, such as excursions to large cities to study the social and economic aspects of the question.

At the University of Wisconsin, for instance, classes in the departments of sociology and economics visit Milwaukee to study the disease from their respective viewpoints, and in many colleges investigative work with reference to such problems as the proportion of deaths from tuberculosis, economic losses, recurrence of the disease in infected houses, local conditions and surroundings, etc., is carried on with satisfactory results. Of the higher institutions of learning about one-fifth are engaged in such work of investigation. In addition to this at least 15 colleges and universities in this country offer extension lectures on tuberculosis, and in Wisconsin special lectures on this subject have been given for some years at farmers' institutes and before teachers' meetings in the state.

Another phase of the question concerns the study of tuberculosis among students and the transmission of the disease in the class-room and rooming houses. In some colleges practical illustrations of disinfection of rooms are given and immediate attention is paid to incipient cases of tuberculosis. Rules have been passed, in some instances, which prohibit students living in houses inhabited by tuberculous families, and committees on hygiene are active in obtaining information which can be used for the protection of students and in controlling the disease.

The influence of an army of young minds interested in this question, leaving our higher institutions and destined to become leaders in all phases of life, must sooner or later be of the greatest moment. Such persons, becoming business men and employers, will surely give more attention to the laws of hygiene and sanitation in work shops, factories, business houses, etc. Or, becoming our legislators, they will respect attempts of the medical profession to place on our statute books laws protecting the health of the people, preventing contagion and establishing state sanatoria, hospitals, etc. Or, becoming teachers in our public or private schools, they will influence the hundreds of thousands of boys and girls in a manner which can only be for the enlightenment of the masses of people regarding questions of hygiene.

While much has already been done along the lines indicated above, still more than one-half of the educational institutions of the country have not yet interested themselves in this problem. There is, therefore, much room for improvement, and undoubtedly, as Norton states, those who have not yet become actively engaged in this work are alive to its importance and soon will cooperate and lend a hand.

THE CROWDED MEDICAL CURRICULUM

During the past year one of the most important subjects of discussion has been the crowded medical curriculum. There are so many subjects in the curriculum of medical schools that it is difficult for students to get clear ideas with regard to them. This overcrowding is becoming worse every year in spite of all that has been done. At first, the overcrowding was only in the final years of the medical course and temporary improvement was effected by transferring several subjects to earlier years; but now the overcrowding, involving all years, is worse than ever. Some colleges, by increasing the entrance requirements to one or more years of col-

1. Science, 1909, xxx, 6.

legiate work, including physics, inorganic chemistry and biology, thereby relieved the medical curriculum of those branches and secured for the medical course students better prepared to take up the medical subjects. In the Canadian schools, instead of requiring collegiate work for admission, the medical course was extended to five years, the first of which was devoted to physics, chemistry and biology. But, even relieving the medical course of these premedical sciences gives only slight relief, and teachers are justly clamoring for more time. Medical students are being ground through a cramming process with insufficient time to think. An extension of the medical course to five years has been suggested, and this may become necessary before many years. As will be noted in a chart on page 542 showing the length of medical courses at home and abroad, in European countries, Austria, Belgium and Portugal have a five-year course and also require a year of science beyond the secondary school for admission, which is practically the equivalent to the requirements in Denmark, Italy, the Netherlands and Norway, as well as in the South American countries—Argentina, Brazil and Uruguay—where a six-year course, including the premedical sciences, is required. Spain has a seven-year course if we include the year in science, while Sweden has a course of eight or ten years, depending on the student's ability to pass his examination. We are not quite ready, however, for this extension of the medical course. In the meantime it should be the purpose of those interested in medical education to secure, so far as possible, the obliteration of the feeling of hurry and the sense of overcrowding in present-day medical study, both of which are fatal to any real attainment of knowledge.

The old Greek term which is the root of our word school meant leisure. The Latin expression *vacare rei* meant to be free for a thing and therefore to apply one's self assiduously to a subject. It is only when the mind feels itself free to apply itself that there is real attainment. All agree that at present this state of mind is practically impossible in medical schools. A constant rush and hurry stimulates to cramming and memory work but does not conduce to real education: that is, to the bringing out of mental powers in such a way as to develop the students' mental faculties. The purpose of education is to make men think, supplying them with sufficient facts to illustrate the important principles and trusting to them to accumulate whatever other facts they need to apply those principles.

It is the giving of information that is occupying so much attention in our medical schools as to overcrowd the curriculum. The requirements of medical education are such that a man must take about six hours of class-room work of one kind or another every day for six days in the week. In medical schools, therefore, thirty-five hours a week are almost obligatory, which is much more time than is required in other departments of universities where courses requiring twenty hours of work a week are considered quite enough. It is a well-recognized principle in pedagogics that if a student is to derive the proper amount of benefit from class-room work he must occupy about as much time in private study as he spends in the class room. It is absurd, therefore, to think of medical students spending six hours in study besides their six hours of class-room work. An eight-hour day in the intellectual world is even more important than for the manual workman. A man may do ten hours of work with his mind but it is never well done and some of it were better not done.

Over and over again in recent years attention has been called to the fact that it is the medical school that sets the worst possible example with regard to the hygiene of education. The average medical student loses more weight and takes his final examinations much more to heart than do students in any other department. We should of course be setting an example in this matter in quite another way. There are many who will say that it is only by long hours of classwork that the medical student can be made to learn all that he has to know for examinations. This is unfortunate if true, for on his capacity to study after he has graduated depends his future career. Commencement is literally the beginning of medical education for a physician. It is what he will learn in the next ten years that counts. How well has he been taught to study for himself, to observe for himself, to think for himself? This ability means most for his future. Is it not possible that we are trying to convey too much information and not furnishing real education; that we are not developing the intellectual powers of the student? It would be worth while to have the problem placed squarely before us at the beginning of the new year.

PRESERVATION OF MEDICAL HISTORICAL RECORDS

An immediate lively awakening of interest in the preservation of the records of American medical history is needed if important material is not to be lost forever within the next decade. The men who knew well the second generation of important contributors to medicine in the United States—"and there were giants in those days"—are now passing away, and with them is likely to pass not only the knowledge, but also the documentary evidence for much of the medical history of the early part of the latter half of the nineteenth century. So long as they were alive their affection for their old masters kept together precious material. This now is likely to be lost from sight unless care is exercised during the next few years.

Such an event is, of course, not likely in the larger cities and for the eastern part of the country perhaps. It must not be forgotten that the West and the South, however, contributed very materially to the progress of medical science during the centuries just passed. The

South was, indeed, much more important than any other part of the country for the originality of its medical science, and we owe to it anesthesia, the first gynecologic operations, the manufacture of artificial ice and other important inventions and discoveries. In the early part of the nineteenth century we had more fellows of the Royal Society in this country than we have at the present time, and most of them were from the South. They were men who had made brilliant studies in Europe and who then settled down into what might seem to us a narrow environment and did fine original work of high character, though we are only just beginning to appreciate all the significance of it. As to how much was accomplished in the West, Dr. Juettner's book[1] on "Daniel Drake and His Followers" furnishes abundant evidence and at the same time makes very clear how interesting is the story of American medicine when properly told.

It is perfectly possible for us to miss important records for the history of medicine if we neglect the compilation of documents at the present time. We called attention editorially in THE JOURNAL some time ago[2] to the fact that even for so important a phase of medical and surgical history as anesthesia we can learn some facts from non-medical writers that are unobtainable from those who wrote deliberately about medicine. We have been accustomed to think that surgical anesthesia was a new thing in the world, though many of the well-known poets and literary men during the three centuries after the fourteenth draw figures from "the mercies of old surgeons who put their patients to sleep before they cut them." Even for so important a disease as tuberculosis the informal gleanings of medical history to be found in non-medical writers are almost more informing and are more interesting than medical history; the same thing is true regarding leprosy.

We welcome, then, the formation of the "Western Association for the Preservation of Medical Records" which has recently been organized[3] in the middle West. The fact that prominent members of the profession who practice medicine in various phases besides the regular school are connected with it as vice-presidents will surely bring about the preservation of the records of sectarian medicine—a consummation eminently to be wished—for this will be extremely interesting after another generation, when medical differences shall have passed away. It must not be forgotten that every phase of medical history will be of interest. Librarians used to bind magazines without their advertising pages. Now we know that the advertising pages of a magazine of any kind often contain more valuable historical matter than the body of the magazine. Precious documents relating to the practice of medicine in our time are to be found even in the flying leaflets issued for advertising purposes. We know a man who, with the historical instinct, faithfully preserved every document of any kind relating to medicine that came to him in the course of twenty years. No matter how trivial it might seem, it was put away in a large room with the others. When at the end of the time he presented his collection to the College of Physicians in Philadelphia it was unique of its kind and contained material of the greatest value for the future historian of medicine in America.

We commend heartily the effort to seek out and preserve all documents that may have a bearing on medical history. We now have enough medical libraries in this country whose controlling boards are quite willing, even anxious, to guarantee the preservation of such material, therefore there need be no excuses on account of the bother or the space required for such things or any reasonable objection to their preservation. Let us hope that similar associations like that we have mentioned will be formed and that everywhere throughout the country some men at least will take on themselves the duty, for it is a precious duty to the American profession of the future, of encouraging an interest in medical history and doing everything they can to preserve the records of it.

1. Reviewed in THE JOURNAL, June 5, 1909, liii, 1854.
2. March 22, 1907, xlii, 1041.
3. Dr. Charles A. L. Reed, Cincinnati, president; Dr. Otto Juettner, 628 Elm street, Cincinnati, secretary; Dr. A. G. Drury, 704 West Eighth street, Cincinnati, librarian.

Medical News

ALABAMA

Medical College Increases Capital Stock.—Notice has been filed with the secretary of state that the capital stock of the Birmingham Medical College has been increased from $15,000 to $75,000.

First-Aid Corps to Be Organized.—The Tennessee Company has decided to organize a first-aid corps at six of its mining camps, and if the experiment succeeds, a detachment will be maintained at each of the mining camps of the company. The work is in charge of Dr. Matthew J. Shields.

Antituberculosis League Meeting.—At the annual election of officers of the Montgomery Antituberculosis League, Dr. Frank H. McConnico was elected a vice-president, Dr. Gaston J. Greil, chairman of the executive committee, and Drs. Forney C. Stevenson and Glenn Andrews members of the committee. During the past year the league has established two dispensaries and distributed about 25,000 leaflets and 8,000 booklets setting forth the local health conditions. During the year, 30 cases of tuberculosis were cared for by the league, only 6 of which were in white people.

Personal.—Dr. Frank P. Petty, New Decatur, has been elected health officer of Morgan County, vice Dr. Scott L. Rountree, deceased.——Dr. Miles P. Hughes, Gadsden, has been appointed a member of the board of pension examining surgeons for Etowah county, vice Dr. John C. Slack, resigned.——Dr. Peter Binford, Somerville, suffered a second cerebral hemorrhage recently and is said to be in a precarious condition.——Dr. William D. Fonville, Ensley, has been elected health officer of Birmingham.——Dr. William G. Somerville and family, Tuscaloosa, have sailed for Europe.

ARKANSAS

Sanitarium Incorporates.—Park Springs Sanitarium has been incorporated at Bentonville with a capital stock of $50,000.

Eclectic Medical Board Election.—The Arkansas State Eclectic Medical Board elected the following officers July 14: president, Dr. Claud E. Laws, Fort Smith; secretary, Dr. Andrew J. Widener, Little Rock; and treasurer, Dr. Pearl H. Tatman, Eureka Springs.

CALIFORNIA

Medical Society Incorporates.—The San Joaquin Medical Society has filed a petition for incorporation. The object of the action is declared to be the prevention of illegal, improper and unlicensed medical practice.

Must Not Distribute Questionable Medical Advertisements.—The police committee of the board of supervisors of San Francisco county have approved an ordinance prohibiting the distribution of advertisements of medical concerns of questionable standing.

Camp of Instruction at the Presidio.—A military camp of instruction for medical officers of the militia opened at Presidio July 15, with Major Albert E. Truby, medical corps, U. S. A., in command. Each state of the Pacific Coast has sent representatives from the medical department of its national guard, in all 25, to take the course.

Tuberculosis in California.—Tuberculosis is a cause of more deaths in cities than in the rural districts in California. Of the deaths recorded 15 per cent. of those in cities in 1908 were from tuberculosis, while 14.1 per cent. of all deaths were from this cause in the remainder of the state. Eight cities show a percentage above the average of 15 and 11 cities have a lower average.

New Hospitals.—The plans for St. Francis Hospital, San Francisco, have been completed, and estimates are now being taken. The building will probably cost about $200,000. Dr. John Gallwey is president, Dr. Walter B. Coffey vice-president, and Dr. John O'Connor secretary of the institution.——A new clinical building is being erected as rapidly as possible by the San Francisco Association for the Study and Prevention of Tuberculosis. It is expected it will be ready to open October 1.——The Southern Pacific Railway Company formally opened its hospital at Baker and Fell streets, San Francisco, July 15. The building and its equipment have cost nearly a million dollars.——The first hydrotherapeutic institution to establish in the west will soon be opened at the Stockton State Hospital.

Personal.—Dr. Weston O. Smith, Alameda, was thrown from a mule on a trail in the Yosemite Valley recently, breaking his left arm near the wrist.——Dr. William H. Davies, Monterey, has lost the sight of his right eye from cataract.——Dr. Mark F. Hopkins has been appointed member of the San Jose Board of Health.——Dr. Rudolph W. Baum has been elected a member of the staff of the German Hospital, San Francisco, vice Dr. Emil O. Jellinek.——Dr. Fred H. Bangs, San Jose, has been elected vice-president of the board of managers of the Agnew State Hospital for the Insane.——Dr. D. C. Strong, San Bernardino, has been re-elected physician and health officer of San Bernardino county, and superintendent of the county hospital.——Dr. C. S. Marvin has resigned as assistant superintendent of the Agnew State Hospital to accept a similar position in the Ukiah State Hospital.——Dr. Gustave Wilson, assistant superintendent of the Southern California State Hospital for the Insane, Patton, has resigned.

COLORADO

Farewell to Physician.—A farewell banquet was tendered to Dr. Sol G. Kahn, Leadville, by his brother physicians of the Lake County Medical Society, on the occasion of Dr. Kahn's departure for Salt Lake City.

Must Stop Practice.—An injunction is said to have been served on Dr. Alfred Freudenthal, Trinidad, restraining him from the practice of medicine during the life of a contract entered into by himself and Dr. John R. Espey, which expires in October, 1911.

Society Meeting.—The Powers County Medical Association held its annual meeting in Lamar July 20. The following officers were elected: president, Dr. Elmer E. Bartelt; secretary and treasurer, Dr. Jirah H. Kellogg, and censors, Drs. William A. Packard and the president.

Personal.—Dr. Samuel D. Hopkins, Denver, is taking a trip to the Orient.——Dr. Thomas E. Carmody, Denver, has been appointed surgeon-general of the National Guard of Colorado.——Dr. George H. Stover, Denver, is reported suffering from *x*-ray cancer and his hands have been operated on recently.——Dr. Francis B. Rothrock, Colorado Springs, has returned from a trip around the world.

The Work of the Tuberculosis Home.—"The Oakes Home," an institution for the tubercular in Denver, now occupies a group of six buildings and has a capacity of 150 patients, and in the fourteen years of its existence has received 8,700 patients. Patients are received in all stages of the disease and at varying charges. Last year a workshop was opened where more than 50 patients have been employed at book binding, china painting, weaving, basketry and metal work. The products are sold at the workshop which is now-self-supporting. The funds were obtained by Rev. Frederick Oakes and the property has been deeded by him to the Episcopal diocese to be used in the care of tuberculous sufferers.

CONNECTICUT

Reception to Scotch Obstetrician.—Sir Alexander Russell Simpson, professor of midwifery in the University of Edinburgh, was the guest of honor at a reception at the Hunt Memorial Building, Hartford, June 28.

Commencement at Yale.—At the annual commencement exercises of Yale University Medical Department, New Haven, Dr. William H. Howell, dean of Johns Hopkins Medical School, Baltimore, delivered the doctorate address on "Medicine."

Personal.—Dr. Frank N. Freeman, traveling fellow in philosophy and psychology of Yale University, has been appointed instructor in educational psychology in the University of Chicago.——Dr. Oliver T. Osborne, New Haven, has gone to Europe.

Vasectomy in Connecticut.—The House of Representatives at Hartford passed a bill July 20, establishing in Connecticut the principle of providing against the increase of defectives by performing the operation of vasectomy on criminals and inmates of state institutions for defectives in cases wherein the physicians deem it wise that the breeding of other defectives be not permitted.

DISTRICT OF COLUMBIA

Hospital Officials to Meet.—The eleventh annual conference of the American Hospital Association will be held at Washington, D. C., September 21-24.

Commencement Exercises.—At the annual commencement exercises of the Georgetown University Medical School, held in Washington, a class of 15 was graduated. President Joseph F. Himmell of the university conferred the degrees and the address to the graduates was made by Dr. D. Percy Hickling.——The item in THE JOURNAL, June 5, relative to the change in the deanship of the Georgetown University was an error, as the change in deanship occurred in the George Washington University.

Personal.—Dr. Reid Hunt has gone to Europe.——Dr. Harvey W. Wiley, chief of the Bureau of Chemistry, has had conferred on him the Cross of the Legion of Honor by the president of France.——Dr. J. Steele Forsythe has been appointed physician in charge of a hospital of a Brazil railway company.——Dr. G. Lloyd Magruder, Washington, has returned from Europe.——Dr. John S. Fulton has been appointed executive secretary of the International Congress on Hygiene.——Dr. Francis Wilson has succeeded Dr. Joseph S. Wall as a member of the board of fire and police surgeons of Washington.——Dr. Thomas A. Lee has succeeded Dr. H. W. Moffitt, resigned, as superintendent of the Casualty Hospital, Washington.

ILLINOIS

Chicago

Personal.—Dr. Alfred D. Kohn has returned from Europe.——Dr. Joseph P. Smyth has been re-elected high medical examiner of the Catholic Order of Foresters.——Dr. and Mrs. William N. Senn, Dr. and Mrs. George E. Baxter, Dr. and Mrs. George F. Fiske, Dr. Corey H. McKenna, and Dr. and Mrs. Arthur R. Elliott have sailed for Europe.

Out-Door School for Tuberculous Children.—On August 3, the first out-door school for tuberculous children was opened on the grounds of the Harvard School, West Seventy-fifth street and Vincennes road, under the joint management of the Board of Education and the Chicago Tuberculosis Institute. The school at first will have thirty pupils, selected from children attending the public schools who are found physically subnormal, or predisposed to tuberculosis.

Addresses of Chicago Physicians Wanted.—Physicians in Chicago who have not already done so are asked to send to the American Medical Association their new street numbers—for two purposes: that THE JOURNAL may be correctly sent and that their addresses may appear correctly in the American Medical Directory which is now being printed. A blank was given on advertising page 40 of THE JOURNAL, August 7, and the matter was discussed editorially on page 463 of that issue.

Hospital News.—The board of directors of the Norwegian Lutheran Deaconess' Home, at a meeting, July 13, completed the arrangements for the new $75,000 hospital to be built adjoining the old home at Haddon avenue and Leavitt street.——A donation of $5,000 has been made by the Illinois Steel Company to the South Chicago Hospital, to be applied toward the payment of the indebtedness.——The Gil W. Barnard Hospital Association, organized and incorporated by prominent Masons of this city, is endeavoring to raise $200,000 for the establishment of a hospital.——Construction work has been begun on the new addition to Wesley Hospital which is to cost $125,000, and to accommodate about 180 additional

patients. The new wing will be ready for occupancy in February next.——By the will of the late Augusta Mannheimer, widow of Dr. M. Mannheimer, $10,000 is bequeathed to the United Hebrew Charities for the benefit of the Michael Reese Hospital, with the suggestion that a contagious ward for children be maintained; $2,500 is bequeathed to the Alexian Brothers Hospital, and all Dr. Mannheimer's medical books are given to Rush Medical College, together with a bequest of $5,000 for the establishment of a library to be named after the testator's husband.

INDIANA

Refused License.—At a meeting of the State Board of Medical Examination and Registration, July 15, it was agreed by a unanimous vote not to reinstate Dr. Charles L. Landfair, Bluffton, whose license was revoked after the investigation of charges of criminal practice.

Personal.—Dr. Lewis N. Geisinger, Auburn, has been appointed secretary of the DeKalb County Board of Health, vice Dr. Jacob D. Casebeer, deceased.——Dr. Walter Baker, South Bend, has been selected to take charge of the Anti-Tuberculosis Society's fresh-air colony at Pottawattomie Park.——Dr. Minnietta Hervey, physician for the Home for the Friendless, Richmond, has resigned.——Dr. Erastus S. Fisher, Markle, is said to have been declared insane July 8.

IOWA

Physician Pardoned.—Dr. J. W. Crawford, Lamoni, convicted of the murder of Miss Maud Stone 4 years ago by a criminal operation and sentenced to imprisonment for twelve years in the state penitentiary, has been pardoned by the board of control because of evidence presented that the deceased was already suffering from the effects of a criminal operation when she consulted Dr. Crawford.

Personal.—Dr. Albert C. Moerke, Burlington, has been elected president of the State Board of Medical Examiners, vice Dr. Alfred P. Hanchett, Council Bluffs.——Dr. W. J. Neuzil has resigned as assistant surgeon of the Soldiers' Home, Marshalltown, and Dr. H. A. Newell has been appointed his successor.——Dr. William J. Heflin, Nora Springs, suffered a severe scalp wound in a collision between his automobile and a telephone pole July 24.——Dr. Edgar B. Henderson, Marengo, dislocated his knee by a fall, July 10.——Dr. Dill N. Pattison, Oelwein, has resigned as local surgeon of the Chicago Great Western Railway.——Dr. Charles S. Grant, Iowa City, has been detailed as surgeon of the Fifty-fourth Infantry, I. N. G., during its encampment this month.

KANSAS

College Wants Medical Department.—Midland College, Atchison, it is announced, will open a medical department by affiliating with Ensworth Medical College of St. Joseph, Mo.

Large Proportion of Convicts Tubercular.—The State Board of Health has just completed its tests among the 812 convicts in the state penitentiary, Lansing, and finds that 160, of whom 88 are white and 72 colored, show signs of tuberculosis.

Election.—At a meeting of the Jefferson County Medical Association held in Valley Falls, June 30, the following officers were elected: president, Albert D. Lowry, Valley Falls; secretary and treasurer, Frederick P. Mann, Valley Falls; censors, Drs. Edgar C. Rankin, McLouth, and Millard F. Marks, Valley Falls, and delegate to the state association, Dr. David D. Wilson, Nortonville.

The Antituberculosis Fight.—Dr. C. S. Emley, state lecturer, started on his tour against tuberculosis August 1. He is traveling over the state in a car specially equipped for the work, expects to visit every town in Kansas, and will remain in the larger towns for a few days, giving lectures and teaching the people what the state is endeavoring to do in its fight against tuberculosis.

Personal.—Dr. Valentine V. Adamson, Holton, has been elected assistant surgeon of the Fort Dodge (Iowa) Soldiers' Home.——Dr. John C. Lardner has been appointed city physician of Chanute, vice Dr. Fred R. Hickey.——Dr. Walter C. Palmer, Kansas City, has been appointed superintendent and physician-in-charge of the hospital at Hiawatha.——Dr. Henry M. Stewart, Hutchinson, has won a suit in which he was sued for $5,000 damages for malpractice.

KENTUCKY

No More Corner Pumps.—A resolution has been introduced in the general council of Louisville calling on the Board of Public Works to draw up an ordinance doing away with the town pumps and to substitute hydrants.

Personal.—Dr. W. H. Nuttall, superintendent of the Feeble-Minded Institute, Frankfort, has resigned, and has been selected by Dr. A. C. Nevitt as physician of the Eastern Kentucky Hospital, Lexington.——The names of Dr. John R. Wathen and Dr. MacCracken, were omitted from the list of the faculty of the University of Louisville, Medical Department.——Dr. William B. Doherty has been appointed a trustee of the Louisville Public Library.——Drs. W. Horace Witherspoon and Carroll P. Price have been elected members of the board of health of Harrodsburg.——Dr. George W. F. Rembert, superintendent of the sanatorium of the Kentucky Antituberculosis Association, has resigned.——Dr. William P. Drake, Rockfield, has succeeded Dr. Eldon N. Hall, Woodburn, as physician of Warren county.——Dr. Philip H. Stewart, Paducah, has been elected president of the board of health of McCracken county, and Dr. Horace Rivers, Paducah, health officer.

LOUISIANA

New Sanitaria.—The new Fenwick Sanitarium for mental and nervous diseases and drug and liquor addictions has been opened at Abbeville under the directions of Frank F. and W. G. Young.——Dr. E. Y. Ames has leased the Mulberry Grove Hotel from Dr. M. G. Marrero, Covington, and will convert the building into a sanatorium for tuberculosis.

Personal.—Dr. Ada Schwing Kiplinger will open a free clinic at St. Mark's Hall, New Orleans, in September.——Dr. C. Milo Brady, New Orleans, special medical inspector of the State Board of Health, has resigned.——Dr. Lester J. Williams has been elected mayor of Melville.——Dr. Yves R. LeMonnier has been elected surgeon of the Soldiers' Home of Louisiana, vice Dr. William P. Brewer, deceased.

MAINE

Graduation Exercises.—The graduating exercises of the Medical School of Maine, Brunswick, were held June 23, and a class of 18 was graduated. The oration was delivered by Hon. DeAlva S. Alexander, Buffalo, N. Y.——The senior class of the school has presented to the school an oil painting of Dr. Edward J. McDonough, professor of obstetrics.

Personal.—Dr. John G. Towne, Waterville, has been appointed junior assistant surgeon of the Second Infantry, Maine N. G., vice Dr. Frederick A. Chandler, Addison, promoted to captain.——Dr. Thomas U. Coe, Bangor, has tendered to the University of Maine a site for the proposed home for its college of law, and in addition offers to give $1,000 toward the building.——Dr. John M. Eager has succeeded Dr. Parker C. Kalloch as quarantine officer at Portland.

MARYLAND

Personal.—The residence of Dr. Mylar P. Sutliff, Somerset Heights, was destroyed by fire July 27, with a loss of $5,000.——Dr. William S. Welch has been appointed health officer of Annapolis.

Outbreak of Typhoid Fever.—An appeal has been received by the State Board of Health to aid in the eradication of an outbreak of typhoid fever in Kent county. The investigation of the board shows that 26 cases have occurred the cause of which has not yet been determined.

New Health Plans.—Dr. Marshall L. Price, the new secretary of the State Board of Health, proposes to ask the legislature for an additional appropriation of $25,000, to be used in overcoming the loss to the state from disease. Among the improvements proposed are the wholesale purchase of nitrate of silver, to be put up in especially prepared packages, and sold or given to nurses and physicians, to be used in cleansing the eyes of the newborn, and the purchase of large numbers of standard disinfectant cards with instructions how to disinfect houses where there have been infectious or contagious diseases.

Baltimore

Change in Editorship.—The *Bulletin of the Medical and Chirurgical Faculty of Maryland*, with the close of Volume I, changes its editor, Dr. Henry O. Reik retiring, and being succeeded by Dr. Emil Novak. The *Bulletin* is strictly a society organ, devoted to the interests of the state society and its component county and local societies.

Illegal Practitioner Sentenced.—Robert H. Darrah, convicted in March last for the alleged practice of medicine without a license, is said to have been sentenced by Judge Gorter to imprisonment for thirty days in jail and to pay a fine and costs amounting to $32.25. An appeal was ordered, and the defendant was released on bail of $1,000.

President Remsen Goes to California.—President Ira Remsen of the Johns Hopkins University started for California August 1, with the referee board of consulting scientific experts, to

obtain information regarding the methods used in drying fruits, in order to decide the question whether or not the so-called "sulphuring" process renders fruit unwholesome.

Personal.—Drs. Harvey W. Cushing, Frank Martin, Thomas B. Futcher and J. George Schmelzer have sailed for Europe. ——Dr. St. Clair Spruill has been appointed associate surgeon to St. Agnes' Hospital, and Dr. J. F. O'Mara assistant. ——Dr. J. Mason Hundley has been appointed visiting gynecologist to St. Agnes' Hospital.——Drs. Edward L. Mellus and William S. Baer have returned from Europe.

MASSACHUSETTS

Personal.—Dr. Freeman A. Tower, recently superintendent of the State Insane Hospital, Worcester, assumed charge of the Burbank Hospital, Fitchburg, July 19.——Dr. Arthur T. Schoonmaker has been elected town physician of Westfield.

Medical Examiner Wins Case.—In the case brought against medical examiner Andrew H. Hodgdon, Dedham, by Elizabeth Morton, in which $50,000 damages were asked on the claim that the medical examiner was negligent in not ascertaining that the plaintiff was unable to leave her home, the jury decided in favor of the defendant.

MICHIGAN

County Hospital for Tuberculosis.—At the recent meeting of the Board of Supervisors of Marquette county, $15,000 was appropriated for a hospital for tuberculosis, to be erected on the county house farm.

Jury Disagrees.—In the case of Dr. G. K. Boyajian, Detroit, who shot and killed his nephew, April 30, the jury disagreed, four voting for acquittal and eight favoring a compromise verdict convicting the defendant, but asking the governor to pardon him and to provide adequate punishment for home despoilers.

Personal.—Dr. Simon M. Yutzy, instructor in osteology and demonstrator of anatomy in the University of Michigan, Ann Arbor, has resigned to take effect in September.——The new city physicians of Detroit are Dr. George F. Lavin, George H. Voelkner, Joshua Hanser, W. G. Kanter, Philander B. Taylor and Edmund Quandt.

Communicable Diseases.—During June there were reported in the state 97 cases of pneumonia, 216 of tuberculosis, 67 of typhoid fever, 177 of diphtheria, 35 of meningitis, 110 of whooping cough, 213 of scarlet fever, 841 of measles and 64 of smallpox. This shows a decrease in typhoid fever, meningitis and smallpox, and an increase in pneumonia, tuberculosis, diphtheria, whooping cough, scarlet fever and measles.

June Mortality.—During June, 2,608 deaths were reported, equivalent to an annual death rate of 11.9 per 1,000. Of the number, 408 were infants under 1 year of age, 159 children from 1 to 4 years of age, and 826 individuals aged 65 years and over. Among the important causes of death were tuberculosis, 222; violence, 186; cancer, 145; pneumonia, 94; meningitis, 45; diarrhea and enteritis of infants, 39; measles, 25; scarlet fever, 19; diphtheria, 16, and whooping cough and typhoid fever, each 15. As compared with May, a slight decrease is noted in the deaths from tuberculosis, diphtheria, scarlet fever, measles, whooping cough, pneumonia and enteritis, and a slight increase in the deaths from pneumonia, cancer and violence. There were 7 deaths reported during the month from tetanus.

MISSISSIPPI

Cocain Seller Fined.—Dr. Sherrod, Meridian, a colored druggist, is said to have been fined $100 and to have been sentenced to imprisonment for sixty days, on the charge of the unlawful sale of cocain.

The State Medical School.—The Medical Department of the University of Mississippi will open for its first session in October. Prospects point to a large initial attendance. The faculty has been selected with the exception of a demonstrator of physical diagnosis.

New Hospitals.—The King's Daughters' Hospital, Grenada, has been incorporated for $10,000. The organization is supported by the local branch of the King's Daughters. A tract of 20 acres near Laurel has been purchased for $3,000, and will be used as a site for a new hospital.

Do Not Want Names Used.—Hinds County Medical Society, at its recent meeting, adopted resolutions declaring it unprofessional to use physicians' names in connection with illnesses, accidents, operations, etc., and requesting the papers of Jackson not to mention names of physicians in connection with the treatment of any case.

Personal.—Drs. William R. Card and Stevens have been reelected associate physicians of the Mississippi Insane Hospital, Meridian.——Dr. Orson M. Turner, Jackson, has been appointed local surgeon of the New Orleans Great Northern Railway.——Dr. Nolen Stewart, Meridian, has been appointed professor of nervous and mental diseases in the Medical Department of the University of Mississippi, and Dr. William Krauss, Memphis, Tenn., has been appointed dean and professor of pathology.——Dr. Harvey F. Garrison, Seminary, has been reappointed health officer of Covington county.

MISSOURI

New Hospital.—A permit was issued July 28 for the erection of the St. Louis Skin and Cancer Hospital, a four-story, fireproof structure, to cost $85,000.

College Will Not Reopen.—It is reported that the Homeopathic Medical College of Missouri, St. Louis, has temporarily suspended and will not reopen for the fall session.

Personal.—Dr. Louis E. Bunte, St. Louis, has been appointed a member of the State Board of Health, succeeding Dr. John T. Thatcher, Oregon, term expired.——Dr. G. Wilse Robinson, Kansas City, has been appointed superintendent of the Kansas City General Hospital.——Dr. George W. Davis, St. Louis, has been appointed first assistant surgeon of the Freedmen's Hospital, Washington, D. C.

Declares Cars Insanitary.—In an official letter, July 28, the governor calls on the State Board of Health to make an investigation of the sanitary conditions of sleeping cars and coaches operated on the railroads of the state. He calls especial attention to the insanitary conditions of closets and washrooms, both in ordinary cars and sleeping cars, and also to the fact of the promiscuous expectoration in cars.

NEBRASKA

New College Buildings.—The John A. Creighton Medical College has commenced the erection of a new laboratory building adjoining the college building proper, to cost $60,000. The building will be four stories in height, will have a frontage of 72 feet on Fourteenth street, and will contain nine general and private laboratories, besides clinic and lecture rooms, etc.——Plans have been accepted for the proposed group of buildings of the College of Medicine of the University of Nebraska, Omaha. The estimated cost of the group is $1,500,000, which provides for nine buildings built about a quadrangle, with a hospital in the middle. The $1,000 prize offered for the accepted plans was awarded to Shipley, Rutan and Coolidge, Boston.

NEW HAMPSHIRE

Personal.—Dr. Gardner C. Hill, Keene, has resigned from the staff of the Elliot City Hospital, and Dr. Arthur A. Pratte has been appointed to fill the vacancy.——Dr. Servule St. Pierre, McGregorville, has been declared insane, and committed to the state hospital.

Society Meetings.—The Manchester Medical Society, at its annual meeting, held June 13, elected the following officers: President, Dr. Walter T. Crosby; vice-president, Dr. Noel E. Guillet; secretary-treasurer, Dr. Clarence O. Coburn, and censors, Drs. Gustavus B. Morey, Wellington A. Thompson, Zatae L. Straw, Clarence O. Coburn and Clarence W. Milliken. Votes of thanks were passed to the retiring president and secretary-treasurer.——Dr. Frank Blaisdell, Goffstown, president of the New Hampshire Medical Society, was the guest of honor at the sixth semi-annual meeting of the Grafton County Medical Society held at the Mary Hitchcock Hospital, Hanover, June 1.

NEW MEXICO

State Society Meeting.—The first meeting of the New Mexico Medical Society to be held in the southeastern part of the territory, will be held in Roswell, September 15 and 16.

County Society Organized.—Physicians of Santa Fe county met at Santa Fe, recently, and organized a county medical society to be affiliated with the state and national organizations. Dr. William S. Harroun, Santa Fe, was elected president; Dr. Frank A. Yoakum, Cerrillos, vice-president, and Dr. James A. Rolls, Santa Fe, secretary and treasurer.

NEW YORK

County Laboratory Wanted.—Physicians of Nassau county have filed a petition with the board of supervisors, asking that a county laboratory be established and a county bacteriologist appointed.

District Society Meeting.—At the annual meeting of the Fourth District Medical Society, held in Plattsburg, July 8, Dr. Dayton L. Kathan, Schenectady, was elected president;

Dr. Grant C. Madill, Ogdensburg, vice-president; Dr. Frederick K. Resseguie, Saratoga Springs, secretary (re-elected); and Dr. George H. Oliver, Malone, treasurer.

Personal.—Dr. J. Walter Wood, Port Richmond, was attacked and assaulted near his home, August 6.——Drs. Francesco G. Rossi, Utica, and George W. Miles, Oneida, have been appointed lecturers of the State Board of Health, and Dr. Martin Cavana has been designated as medical expert.——Dr. Fred D. Andrew, Rochester, has been designated as medical expert and Drs. George W. Goler and Montgomery E. Leary, Rochester, as lecturers of the State Department of Health.——Dr. George H. Beers, Ticonderoga, was thrown from his automobile recently, breaking three ribs.

New York City

Italians Organize Society.—The New York Italian Medical Society has been incorporated with Drs. Antonio Stello, Vincenzo Sellaro, Antonio Scaturro, Giuseppe Tomasulo and Antonio Tarditi as directors.

Building for Physicians.—A 12-story office building is to be erected at 124 Joralemon street, Brooklyn, to be known as Galen Hall and to contain 45 suites of offices for the exclusive use of physicians and dentists.

Personal.—Dr. Thomas Addis Emmet will be one of the speakers at the exercises commemorative of the Battle of Yellow Ford, in Chicago, August 15.——Dr. Morgan G. Cutler was seriously injured in an automobile accident in Council Bluffs, August 1.——Dr. William H. Nammack, Far Rockaway, has been reinstated as coroner's physician of Queen's Borough.——By the will of Mrs. Marie H. Crawford, Pittsfield, Mass., $50,000 and the estate in Sheffield, Mass., is bequeathed to Dr. Thomas H. Allen.

Buffalo

Personal.—Dr. Robert F. Sheehan, Jr., has been appointed professor of hygiene at the University of Buffalo, vice Dr. Henry R. Hopkins, appointed emeritus professor.——Dr. Herbert Hill has resigned as professor of chemistry, toxicology and physics.——Drs. Jane W. Carroll, Regina Flood-Keys and Amelia Earle Trant are spending the summer abroad.——Dr. Albert P. Sy has been appointed associate professor of chemistry and toxicology in the University.——Dr. John H. Pryor has been placed in charge of the dispensary of the Buffalo Association for the Relief and Control of Tuberculosis.——Dr. Ernest Wende, health commissioner, has recovered from his recent illness and resumed his duties.

OHIO

Personal.—Dr. Adolphus W. Foertmeyer has resigned as receiving physician to the Cincinnati Hospital, and Dr. Adam E. Schlanse has been elected his successor.——Dr. George A. Fackler has been made vice-president of the new health board of Cincinnati, Dr. Mark A. Brown, health officer, and Drs. Edward W. Walker and John H. Landis have been appointed members.——Dr. James W. Miller has left for Europe.

Additions to the Faculty.—The trustees of the University of Cincinnati have made the following additional nominations in the medical department: Dr. Shaler Berry, lecturer on medical jurisprudence; Dr. Marion Whitacre clinical instructor in medicine; Dr. John A. Caldwell, clinical instructor in surgery; Dr. Clifford Sater, clinical instructor in diseases of the chest; and Dr. Albert H. Freiberg, professor of orthopedic surgery and supervisor of clinics.

OREGON

State Tuberculosis Board Organized.—The State Board of Tuberculosis Commissioners, created by act of the last legislature, met in Salem June 9, and decided to utilize the present building of the Deaf Mute School, east of Salem, as a temporary sanatorium for tuberculosis.

Hospital Notes.—Two of the older hospitals of Portland are completing large annexes. By the first of the year the annex of St. Vincent's Hospital will be ready, and the annex of the Good Samaritan Hospital, including a roof garden, is almost completed.——The new Sellwood Hospital was opened July 2. The building has been erected at a cost of $15,000.——Dr. John F. Calbreath, Salem, formerly superintendent of the Oregon State Insane Hospital, has purchased the interest of Dr. Wilson D. McNary, in the Mount View Sanitarium, Portland, and the Glencoe Sanitarium.

Personal.—Dr. Ferdinand H. Dammasch has been elected assistant health officer of Portland, vice Dr. Parker, resigned.——Drs. Allan Welch Smith, George B. Story and Rupert J. Chipman have been appointed members of the board of health of Portland, vice Drs. Andrew J. Giesy, Robert C. Yenney and George F. Wilson, resigned.——Dr. Charles A. Ault, Enterprise, was seriously burned by an explosion of spirits on a train, July 7.——Dr. Calvin S. White, Portland, is reported to be critically ill in St. Vincent's Hospital.——Dr. Cortez H. Wheeler has been elected health officer of Portland, vice Dr. E. C. Pohl, resigned.

SOUTH CAROLINA

Pellagra.—At the August 6 meeting of the Abbeville County Medical Society, held in Abbeville, pellagra was studied. Several patients with the disease were presented, and Dr. James W. Babcock, Columbia, and Surgeon C. H. Lavinder, U. S. P. H. and M.-H. Service, presented papers.

Infirmary Opens.—Fennell Infirmary, Rock Hill, was formally opened July 21. The institution contains 18 rooms for patients, together with the necessary operating, sterilizing and other rooms, and in the basement there are two commodious wards for colored patients. The infirmary is the result of years of work of Dr. William W. Fennell, who is surgeon in charge.

GENERAL NEWS AND COMMENT

Personal.—Dr. Milton J. Rosenau, director of the Hygienic Laboratory of the U. S. Public Health and Marine-Hospital Service, has been appointed head of the newly established department of hygiene and preventive medicine in Harvard Medical School, Boston.

Railway Surgeons Meet.—The Buffalo, Rochester and Pittsburg Railways Surgeons' Association met for organization in Rochester, July 20, and elected the following officers: President, Dr. A. Miner Straight, Bradford, Pa.; vice-president, Dr. William B. Johnston, Ellicottville, N. Y., and secretary, Dr. Spencer M. Free, Du Bois, Pa.——At the twenty-ninth annual meeting of the Lehigh Medical Association held at Delaware Water Gap, Pa., July 22, the annual address was delivered by Dr. William L. Rodman, Philadelphia, on the treatment of hernia, and the following officers were elected: President, Dr. Obediah H. Sproul, Flemington, N. J.; vice-presidents, Drs. Jonathan M. Wainwright, Scranton, William E. Gregory, Stroudsburg, H. Herbst, Reading, and Henry A. Grim, Allentown; secretary, Dr. Clinton J. Kistler, Leighton, and treasurer, Dr. Albert A. Seem, Bangor.

Medical Colleges and University Connection.—Several medical colleges have become more closely connected with colleges of liberal arts during the past two years and are more completely under the control of universities, which doubtless means better laboratories, better teachers, and the adoption and enforcement of higher standards. In some of these sweeping changes have been made. (1) The Medical College of Alabama is now the organic Medical Department of the University of Alabama. (2) The University of Southern California College of Medicine is now the Los Angeles Clinical Department of the University of California. (3) Tulane University Medical Department has formed closer connection with the University and now has the buildings for the first two years of the medical course on the university campus. (4) The new Ohio-Miami Medical College of the University of Cincinnati will be under the direct control of the university. (5) Toledo Medical College is now the Medical Department of the newly established Toledo University, the development of which will be watched with much interest. (6) Tennessee Medical College has become the organic medical department of the Lincoln Memorial University. (7) It is stated that the new Medical Department of the Universities of Nashville and Tennessee will receive strong support from the University of Tennessee.

CANADA

Council Election.—The elections for the council of the College of Physicians and Surgeons of Saskatchewan, which recently took place, resulted as follows: Dr. Stanley Millar, Battleford; Dr. A. McG. Young, Saskatoon; Dr. James T. Irving, Yorkton; Dr. A. E. Kelly, Swift Current; Dr. W. A. Thomson, Regina; Dr. Hugh E. Eaglesham, Weybourne; and Dr. Andrew W. Argue, Grenfell.

University-Hospital Agreement.—A new agreement has been entered into between the trustees of the University of Toronto and the board of governors of the Toronto General Hospital. The university has added the sum of $400,000 to the $300,000 contributed a few years ago, on the understanding that the hospital will build on the site now being prepared a new pathologic building for the uses of the medical faculty of the university, and grant certain rights as to the appointments of heads of services. The subscriptions for the new hospital now amount to $1,300,000, the university debentures to another $300,000, and the value of the site of the old hospital is placed

at $300,000. The cost of the new hospital is put down at $2,200,000, which still leaves $300,000 which the trustees of the hospital have undertaken to raise, as a part of the bargain with the university. The chief professors or other heads in the faculty of medicine of the university are to be ex-officio heads of services in the hospital. Other appointments are to be made to the hospital staff only on the recommendation of a joint committee composed of eight members, four each from the hospital and university. In a few weeks the ground for the new building will be prepared. It will be thoroughly ploughed, disinfected and then left until the spring, when excavations will be commenced.

FOREIGN

To Warn Students Against Exploitation of Physicians.—The profession in Belgium held a congress recently to discuss merely practical questions connected with medical practice—the fifth annual congress of the kind. Van Pée urged the necessity for instructing newly graduated physicians as to the various traps set for exploitation of the medical profession, into which they are liable to stray in their ignorance. He suggested instruction during the medical course, but others advocated a warning pamphlet for graduates, setting forth the rights and duties of the medical profession and the dangers that threaten the young physician. The importance of cooperation between the organized charities and physicians, in order to restrict free medical care to those actually unable to pay for it, was emphasized anew and a number of methods discussed how to render this more practicable. The *Gazette Médicale Belge*, July 15, contains the discussions in full.

New Insane Asylum at Naples.—One of the largest insane asylums in Europe has just been inaugurated in the vicinity of Naples. Twenty-seven buildings in large grounds form this city for the insane on the Capodichino hills; it has accommodations for 2,000 inmates and the new asylum at Rome for 1,063. Professor L. Bianchi is in charge of the Naples asylum.

Epidemic of Psittacosis.—A correspondent of the *Gazzetta degli Ospedali*, July 25, states that twenty-three scattered cases of an atypical pneumonia have been observed at Zülpich, near Cologne, with four deaths to date. The infection has been traced to two small parrots, recently purchased, in the house of the person first affected. The other cases developed among friends and relatives from a distance who had attended her funeral. The streptococcus cultivated from the cases was apparently identical with a streptococcus found in all the organs of one of the parrots. A vaccine was made with the streptococcus which seems to have aided in the recovery of some of the later patients.

Jubilee Anniversaries in the Profession Abroad.—A number of well-known physicians in Germany have celebrated their fiftieth professional anniversary this summer, including B. Fränkel, the editor of the *Archiv für Laryngologie*, who has taken such a prominent part in the campaign against tuberculosis. THE JOURNAL described, Nov. 17, 1906, page 1664, the international historical laryngologic exhibition held at Berlin that month in honor of his seventieth birthday. Another prominent laryngologist also celebrated his jubilee anniversary last month, A. Lucae, of Berlin, the author of the vibratory sound treatment of sclerosis of the ossicles. The honors paid to Sir Felix Semon on his retirement were mentioned in THE JOURNAL recently, page 308. The list of *Jubilars* includes further W. Ebstein, the clinician of Göttingen, who seeks his recreation in the study of the history of medicine. The July number of *Janus* publishes a two-page bibliography of his important contributions to the history of medicine alone. Other celebrants are the surgeon, B. Bardenheuer, of Cologne, one of the leaders in treatment of fractures by extension; the physiologist and hygienist, J. Rosenthal, of Erlangen; K. Eberth, professor of pathologic anatomy at Halle; L. Hermann, whose "Physiology" is in its thirteenth edition, and A. Bilharz, brother of the discoverer of the distomum. Bilharz practiced in this country from 1865 to 1878. In Spain, the eminent professors and clinicians, J. Calleja, dean of the medical faculty, F. de Cortejarena and M. Iglesias, were presented with souvenir medals by the Academy of Medicine at Madrid; other medals were given five other members whose professional career has also passed the fiftieth milestone.

Eighth International Tuberculosis Conference.—This conference was held at Stockholm, Sweden, July 8, with the attendance large and the discussions fruitful. A *Festschrift* presented to the conference gives a résumé of what Sweden has accomplished in the campaign against tuberculosis, containing many of the articles read by Swedish authorities. Buhre reported the growth of the Swedish National Association against Tuberculosis which now has over 22,000 members to a total population of 5,250,000. It maintains a tuberculosis exhibition and has had 976 public lectures delivered at various points since the organization of the association five years ago. Pamphlets for school children and for recruits have been issued and distributed by the thousands as also a special pamphlet warning against undue dread of the disease. Stipends for postgraduate courses at tuberculosis sanatoria for physicians and nurses are provided, and special study made of inexpensive sanatoria and a number of such erected. A special tenement house was also built with flats of one or two rooms and kitchen, rented at reduced rates to working-men's families in which one or both of the parents are tuberculous. The tenants are given extra fuel to compensate for the heat lost by the required ventilation, and the children are given their dinners. Facilities for bathing are also provided free. The tenement in Stockholm proved such a success that a similar one has been erected in a country district. The healthy children of tuberculous parents are boarded out in the country, 246 having been thus provided for by the association and 87 by the poor authorities, while a special asylum has been erected for such children whose parents prefer institutional rather than foster family care for them. The sale of the special tuberculosis stamps has realized $71,000 to date.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, July 31, 1909.

Radium in Diseases of the Eye

As stated in previous letters considerable attention is being devoted to radium in the treatment of disease. The latest development is its application to diseases of the eye. At the Moorfield's Hospital (the principal eye hospital in this country) Mr. Arnold Lawson, an ophthalmic surgeon and Dr. Mackenzie Davidson, a radiographic expert, have tried it in diseases which usually proved obstinate or improved slowly under ordinary treatment, or else were of a virulent nature requiring drastic measures. So far only 17 cases have been treated, but the results are most encouraging. Most of the lesions were corneal ulcers, 4 were non-ulcerative affections of the cornea and one was episcleritis. After one application for 5 minutes to a hypopyon there was distinct benefit. The patient was a man aged 35, who gave a history of injury to the right eye. There was a deep ulcer and a gray infiltrated area 4 mm. in diameter and a large hypopyon. Twenty-nine milligrammes of radium were applied for five minutes and five days later the congestion was subsiding and the hypopyon had disappeared. Two days after a second application he was discharged practically cured. All the other cases did very well. Some punctate erosions gave equally encouraging results, as also did old cases of trachomatous pannus, except in one case in which increased vascularity followed the treatment.

The Imperial Cancer Research Fund

The seventh annual report of the Imperial Cancer Research Fund has been presented by Dr. Bashford, general superintendent, at a meeting of the general committee presided over by the Prince of Wales. Dr. Bashford claimed that the arduous work done by the fund in the past seven years had effected a revolution in the cancer problem. Seven years ago no one conceived it possible that portions of the mammalian organism could be kept growing for a period four times the length of life of the animal. The number of different tissues now being propagated separately made it possible that the majority of tissues might be so grown and segregated. In other words a living animal could be analyzed into many of its living component tissues.

Annual Meeting of the British Medical Association

The annual meeting of the British Medical Association was held at Belfast on July 23 to 31. Though the number of members who attended (about 700) was not large, the meeting from every point of view—scientific and social—was a great success. The comparative smallness of the attendance compared with that of the previous meetings was no doubt due to the fact that the meeting was held in Ireland at a city not very acceptable to the great English centers of population from which it must be reached by a sea voyage. The meeting took place in the University of Belfast, the spacious class rooms and halls of which provided ample accommodations for all the sections. At the meeting of the representatives of the various divisions of the association, many medico-political and medico-ethical topics were discussed. One, to which allusion has already been made in THE JOURNAL, is of particular interest. Dr. Kirby of Birmingham moved "that the adver-

tisement of patent foods, proprietary remedies and the like in the *British Medical Journal* is calculated to authenticate in the eyes both of the medical profession and of the public, the preposterous and often mendacious claims of the vendors, and that present condition of the advertisement pages is, in this respect, not creditable to the association." Dr. Kirby denounced many of the remedies advertised in the *British Medical Journal* as almost quack remedies, defining these as remedies of which the exact composition is not declared and which are widely advertised in the lay press. He held that the fact of such advertisements appearing seemed to the public to authenticate all that was said about them. The discussion revealed some divergence of opinion. While some members warmly supported the resolution and protested against the "prostitution of the pages of the *Journal*" by such advertisements, others held that the association could not give assurance of the veracity of every line that appeared in the advertising pages and that the fact of an advertisement appearing did not carry any sanction. Then the question was raised what would the carrying out of the proposal cost the association? The treasurer said that the *Journal* already refused many advertisements and that this cost them about $5,000 a year. He held that there was very little in the advertisements to complain of. Finally as compromise a motion was carried that the council instruct the *Journal* and finance committee to appoint annually a subcommittee for the revision of advertisements; that no advertisements be accepted until they have been approved by the subcommittee; and that the subcommittee shall not allow any advertisement to appear which contains misleading or exaggerated statements, nor any advertisement of any preparation which is advertised elsewhere than in the medical press as a remedy for any morbid condition, and is of such a character that its use demands medical supervision or which is advertised anywhere in misleading or exaggerated terms.

The president, Sir William Whitla, paid a tribute to the first occupant of the chair of medicine in the University of Belfast, created in 1836, Dr. Henry Macormac, father of Sir William Macormac, and "the father of the open-air treatment of consumption." In his works on "Consumption" published in 1855 he insisted on the influence of impure or rebreathed air as a cause of tuberculosis. But no one believed him; the discovery of his genius required half a century for its acceptance. Sir William criticized severely the present system of medical education. The number and extent of the subjects now placed in the medical curriculum were so great that the brain of the student failed to expand in assimilative power with the growth of advancing science.

Action Against a Hospital for Injury During Operation

In THE JOURNAL of May 15, page 1592, has been reported an extraordinary action by a physician against the governors of St. Bartholomew's Hospital. He alleged that while being examined under anesthesia his arms were allowed to hang over the sides of the table; that one was bruised by being pressed upon by the operator or some other person and that the other was burned by a hot water bottle; that the result was traumatic neuritis of both arms which paralyzed him and prevented him from following his profession. As he produced no evidence showing that he was injured in this way the judge refused to put the question of negligence to the jury and also held that even if there was evidence of negligence the governors were not liable for the action of their staff. The case then came before the court of appeals and was again dismissed.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, July 29, 1909.

Preservation of Medicinal Plants

The Academy of Medicine heard a report by M. Guignard, director of the Superior School of Pharmacy, on a work by MM. Perrot and Goris in regard to the sterilization of medicinal plants. It is well known that most plants lose a great part of their properties along with their freshness through chemical action. It is of importance then to arrest this chemical action as soon as the plants are gathered. Perrot and Goris treat the plants in an autoclave in the presence of alcohol vapors, after which the dry leaves preserve without modification the physiologic properties that they have in the fresh state. Experiments have been made chiefly on digitalis leaves.

The Instruction of Abnormal Children

The question of the instruction of abnormal and backward children, which for some years has been occupying physicians and educators, has just been brought before the Superior Council of Public Instruction. The latter has decided that in order to obtain certificate of fitness to teach backward children candidates will have to undergo a year's probation in a special establishment, designated by the Minister of Public Instruction, and affording opportunity to study at first hand the best means for attracting the attention of backward children and of drawing out their intelligence.

Prescription Clerks

An energetic campaign is now being carried on by the association of prescription clerks against the too long hours of work. Compelled to work fourteen to sixteen hours consecutively, often without a night service to assure them an opportunity to rest, the prescription clerks maintain that the situation is dangerous for the public itself, prescriptions put up under such conditions being liable to accident. The association has passed a resolution demanding a better regulation of their work by the closing of the laboratories at 8 p. m. and the creation of night municipal pharmacies.

Monument to Professor Liégeois

The tragic death of Professor Liégeois, who with Liebeault, Bernheim and Beaunis, founded the famous "school of Nancy," and who was the first jurisconsult to study the application of hypnotism and suggestion to criminal law and to legal medicine, was mentioned about one year ago (THE JOURNAL, Sept. 12, 1908, li, 929). A committee composed of the colleagues, friends and pupils of Liégeois has just been formed to erect to his memory a monument at Bains-les-Bains (department of the Vosges) at the spot where the scientist was killed by an automobile.

The Potain Prize

The Academy of Medicine has just been authorized to accept a legacy of $5,000 (25,000 francs), the accumulated interest of which for the three past years will serve to found a perpetual triennial prize in honor of the illustrious clinician who died a few years ago and which will be awarded to the author of the best work on clinical medicine which has appeared during each triennial period.

Election of Two Foreign Associates of the Academy of Medicine

In its session of July 27 the Academy of Medicine chose Drs. Hansen of Bergen and Morisani of Naples as foreign associates.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, July 22, 1909.

Cultivation of Spirochæta Pallida

The attempt to cultivate the *Spirochæta pallida* so as to demonstrate its etiologic importance by artificial infection of animals is continually being made and more favorable results appear to have been obtained. In the last number of the *Deutsche medizinische Wochenschrift*, Schereschewsky reports the continuation of his culture experiments in Neisser's clinic. He has succeeded in obtaining cultures of the spirochete, on horse serum, from primary affections of the fetal syphilitic spleen and blood and has been able to continue the cultivation to any desired number of generations. In the original cultures of the first few days the type of *Spirochæta refringens* is found almost without exception, but in the later generations and in the older original cultures the forms correspond to *Spirochæta pallida*. Animal experiments have, however, remained unsuccessful. Professor Mühlens has reached the same results and his work has been confirmed in the institute for infectious diseases. In the latter institute animal experiments with the pure culture of the spirochete are being carried on.

Personal

Professor Steyrer, first assistant of Professor Kraus in Berlin, has been chosen as the successor of Professor Minkowski for the position of director of the medical clinic at Greifswald.

The director of the medical clinic at Freiburg, Professor Bäumler, has resigned on account of age. He is succeeded by the previous director of the medical policlinic, Professor de la Camp. Professor Bäumler received the freedom of the city of Freiburg on the occasion of his resignation.

Professor Czerny of Breslau has received a call to the newly established chair of children's diseases in Strasburg. Professor Garré of Bonn has been given an honorary doctor's degree by the University of Geneva. Garré was born in Switzerland.

Physical Character of Recruits for One-Year Volunteer Service in the German Army

To obtain some statistical data with reference to the influence which the higher schools exercise on the physical development of the pupils, the military authorities determined in 1904 that, for every young man who appeared for enlistment in the one-year voluntary service (generally at the age of 19 to 24), a card should be filled out in which a number of questions regarding the condition of the volunteer's health should be answered. In this way, data were obtained regarding 80,454 recruits, from 1904 to 1906. Schwining and Nicolai, two military physicians, have published an article based on this material, giving very interesting results. The applicants for the one-year volunteer service as a rule show a somewhat higher degree of fitness than the other military recruits. The most unfavorable physical condition is presented by the pupils of the gymnasia, then follow the pupils of the technical gymnasia, technical schools and upper technical schools (*Realgymnasiasten, Realschüler, Oberrealschüler*).

If we take into consideration the time that passes between leaving school and enlistment, it appears that those who have had the shortest term of schooling show the greatest fitness and their number diminishes constantly the longer the school term; and, moreover, the number of suitable recruits diminishes in a still greater degree the longer the time that has elapsed since leaving school till the time of examination. While without doubt the latter fact is partly accounted for by the circumstance that weakly individuals, or those affected with other bodily defects, wait longer for volunteering for service than strong and sound men, still, in the opinion of the authors, the time since school of itself must exercise an especially unfavorable influence on physical development. The proportion of the more serious degree of unfitness increases with the length of the school period. Likewise, the gymnasia and technical gymnasia are distinguished from the other classes of schools by the higher degree of unfitness of their pupils. There are proportionally more tall individuals among the one-year volunteers than among the other recruits. The general degree of fitness increases on the average with increasing height. In general, the degree of fitness is lower among short recruits; but in four Bavarian provinces the conditions are exactly reversed. Among former pupils of the gymnasia, 47.8 per cent. had defects of vision; 36.9 per cent. were myopic. The number of those with defects of vision increase in the gymnasium pupils with the duration of their attendance at school. In general, 44.1 per cent. of the one-year volunteer recruits have defects of vision; 33.5 per cent. are short-sighted.

The Leipsic League

A report of the activity of the Leipsic League for the last year was made at the general meeting held in Lübeck, which gives a satisfactory account of the work accomplished by the executive committee. The league has now 22,440 members; nearly 2,000 members have joined within the last year; certainly a remarkable success when it is considered that the yearly dues are $5 (20 marks), times are hard for our profession, and the social relations of our profession are in general unfavorable. The various items of mail matter in the course of a year amount to more than half a million. Membership on the executive committee in general is honorary; only the two secretaries receive a salary, as they must naturally devote their entire attention to the league. The league includes 10 national or provincial leagues, 128 sections, 10 auxiliary groups. These leagues are directed by 1,100 superintendents. For purposes of agitation and at times of economic struggles, speakers are sent by the committee to the place affected. The committee maintains a bureau for legal information and a bureau to secure places for assistants, substitutes and ship's surgeons. Last year 2,227 places of the first two classes were provided and 244 of the latter. The league also carries on its own book business, retails books and publishes a physician's calendar. The committee also maintains a correspondence department in which communications to the political medical press are reprinted, and a bureau, sustained by the voluntary contributions of physicians, for the assistance of the needy widows of physicians. The receipts for the last year amounted to $4,440 (18,500 marks); the resources on hand amount to $3,600 (15,000 marks); the expenditures were $4,560 (19,000 marks). The largest pecuniary transactions of the committee were necessitated by the conflicts with the *Krankenkassen;* in this work sometimes physicians who threatened to appear as strike-breakers were dissuaded by money contributions and in other cases members who were compelled to give up their positions with the *Krankenkassen* in consequence of the strike were assisted pecuniarily until the end of the struggle. In this way large sums were expended which were secured not only by the yearly dues of the members, but also by voluntary contributions from German physicians.

VIENNA LETTER

(From our Regular Correspondent)

VIENNA, July 28, 1909.

The Antimalaria Campaign in Austria

In southern Austria malaria was until recently so prevalent that energetic measures had finally to be adopted. In 1907 and 1908 the sanitation of the entire province of Dalmatia was effected. In the first year 212 towns and villages, with 89,000 inhabitants, were dealt with. Twenty-three physicians and 359 attendants were engaged all the year round. All suspected ponds and cisterns were filled up and a thorough examination of all affected persons with a routine treatment instituted. There were 3,400 persons with chronic malaria and 6,417 fresh cases, or 43 per cent. of the entire population, to be treated. In only 5,750 cases no swelling of the spleen could be discovered. Quinin and iron were given for fifteen days in full doses in chronic cases, and quinin alone in acute cases. No after-treatment was adopted. In 20 per cent. there was recurrence; this was treated by the same method. No prophylactic doses were distributed.

Altogether, 630 kilos (about 1,700 pounds) of quinin were used, or about 15 gm. (half an ounce) *per capita*. A rapid diminution of serious cases was noted; while formerly more than 10 per cent. of all patients had spleens reaching 4 inches or more below the costal arch the number soon fell to 3 per cent. The expense was very low, $50,000. In 1908, of 113,000 new subjects, only 4,350 were found without swellings of the spleen. In 18 per cent. there was recurrence after treatment. The amount of quinin distributed was 725 kilos, or over 1,900 pounds, an average of 14 gm. per person, as 39 per cent. of the population were affected. In 1909, the remaining district, with a population of 220,000, will be dealt with, and thus the whole country will be rid of the disease.

Pharmacology

PAPAYANS BELL

Report of the Council on Pharmacy and Chemistry

The following report of a subcommittee was submitted to, and adopted by, the Council and its publication directed.

W. A. PUCKNER, Secretary.

Papayans (Bell) made by Bell & Co., Orangeburg, N. Y., is said to consist of the "digestive principle obtained by our own exclusive process from the fruit of *Carica papaya*, combined with willow charcoal, chemically pure sodium bicarbonate and aromatics." The following statement appears on the package: "For the treatment of dyspepsia, flatulence, nausea, vertigo, hyperacidity, palpitation and other symptoms of indigestion and the vomiting of pregnancy. Peritonitis, cholera morbus, alcoholism and seasickness." "Digests every variety of food, removes every symptom of indigestion, restores the entire digestive tract to a normal condition." The dosage is recommended as follows: "From one to three tablets before meals, or two hours after eating. In severe cases, three tablets dissolved in hot water and repeated as necessary."

A circular which accompanies the package details the therapeutic virtues of the preparation and contains what purports to be extracts from medical journals, in which Papayans is recommended.

Examination of specimens purchased in the open market showed them to contain the following ingredients: Charcoal, sodium bicarbonate, ginger, saccharin and oil of gaultheria. As the product is said to contain papain, the presence of enzymes was tested for, with the result that it was found to possess neither proteolytic nor amylolytic properties. The results of our examination are in accord with the results obtained by a member of the Council, who examined the product independently, and who writes:

"We have made some extended tests with Papayans Bell, and find that the tablets consist essentially of sodium bicarbonate and charcoal, with a little flavoring matter. We find

no digesting power for starch or egg albumin. At any rate, no appreciable change follows in the albumin in three hours, and no conversion to sugar in the same time, or change of starch to a point where the iodin reaction is weakened. The product seems to be practically inert."

It is recommended that Papayans Bell be refused recognition, and that publication of this report be authorized.

COMMENT: It will be remembered that two other products of Messrs. Bell & Company have been discussed in this department: Salacetin (Bell)[1] and Sal-Codeia (Bell)[2]. Salacetin was examined with several "synthetics" which all turned out to be mere acetanilid mixtures. Salacetin, advertised as "a combination, with heat, of Salicylic and Glacial Acetic Acids and Phenylamine" when examined "was found to be a mixture and to contain the following ingredients approximately in the proportion given: Acetanilid, 43; sodium bicarbonate, 21; and ammonium carbonate, 20." Sal-Codeia (Salacetin-Codein) therefore, would be the same with codein added.

Papayans (Bell) seems to be consistently fulfilling the life-history of the average nostrum. Made of well-known drugs and invested by its manufacturers—or exploiters—with virtues absurdly disproportionate to the known properties of the alleged constituents of the nostrum, the preparation was introduced to the world *via* the medical profession. With the help of thoughtless physicians, aided by a skillful and aggressive advertising campaign and augmented by the "free sample" device, the business grew and prospered. The bottles with the name and address of the company blown in the glass and with the varied therapeutic indications for the nostrum printed both on the label and on a circular in which the bottle is wrapped, have carried the manufacturer's message to the drug-taking public.

Apropos of this point, the recent "literature" contains what purports to be endorsements of the nostrum by medical journals. Thus there is quoted from the *New York Medical Journal*, Jan. 2, 1909, in part, the following recommendation: ". . . we venture to suggest to our readers who have not tried this remedy that they prescribe one *original sealed package* of Papayans (Bell) and that they carefully note the results from its use." [Italics ours.—ED.] Having seen an "original sealed package" we believe that we can predict the "results from its use." On any patient not mentally unbalanced, the result would be that the next dose of Papayans (Bell) he thought that he needed would be purchased from the druggist direct.

That such results are not hypothetical is evidenced by the statements of the exploiters of Papayans (Bell) that "the annual sale now exceeds four hundred million tablets." Assuming this statement to be true, it would be necessary for every physician in the United States to prescribe over three thousand of these tablets every year—if they reached patients only through the physician! The company's own figures indicate that the time is about ripe to take care of this vast army of self-drugging laymen and recent circular letters seem to recognize it. The physician is notified that druggists are now furnished with Papayans (Bell) "in sealed packages of thirty and one hundred tablets." The medical man is told that the firm has "not forgotten the days when physicians' orders made our success possible" and it says it is "sincerely grateful to the doctors who gave us orders in the days when we were struggling for recognition." This tacit admission of the value of the physician as an unpaid agent for nostrum houses should be given thought by those physicians who prescribe such preparations.

While, so far as we know, Bell & Co. have not yet advertised in the daily press, they are not averse to furnishing the laity with samples when requested. An Ohio physician sent us the following letter received by a young woman who had written asking for samples:

Miss X—— Y——,
Z——.

Dear Madam: As requested, we are mailing you sample of our Papayans (Bell) for Indigestion

If a sufferer from Indigestion, we want you to give it a thorough trial as directed and note remarkable results that we believe you will get from its use.

Kindly write us if you are unable to obtain it from your local druggist, as it is stocked by nearly every good drugstore in the United States. Yours truly,

BELL & CO.

Evidently Bell & Co., while admitting that their financial success is largely due to the kindly, though misguided, efforts of physicians, are not going to let a little thing like loyalty to the medical profession interfere with a possible sale of their tablets.

THE L. D. JOHNS COMPANY

A discussion of the methods of Bell & Company would not be complete without reference to a concern which seems to be closely connected with it: the L. D. Johns Company, whose "only product" is a sugar-coated laxative tablet. Regarding the "sugar coated" tablet, a visitor at the place of business of Bell & Company and the L. D. Johns Company, wrote: "These companies apparently are not in possession of any tablet coating machines and in questioning on this point stated that some of their tablets were sent out to be coated." There is a sameness regarding the claims for the laxative tablets of the two companies that might lead one to suspect that the same individual prepared both. For instance:

CASCARANS (BELL)	DR. JOHN'S TABLETS
"Taken as directed, it permanently removes the great majority of cases of habitual constipation."	"Taken as directed . . . permanently remove the great majority of cases of habitual constipation, torpid liver and sick headache."
". . . a harmless vegetable preparation."	"A harmless vegetable remedy."
". . . for the removal of pimples, yellowness and greasiness of the skin . . ."	". . . removes pimples, blotches, sallowness and greasiness of the skin . . ."
". . . one tablet at night, one night and morning, or, in severe cases, one three times a day, gradually decreasing the frequency of the dose as improvement permits."	"One at night, one night and morning, or, in severe cases, one three times a day. Gradually decrease the frequency of the dose as improvement permits."

According to a leaflet sent out with samples by the L. D. Johns Company, the company is capitalized for $500,000, divided into 50,000 shares at $10.00 each; these shares are sold to those physicians who will agree "to prescribe the tablets at every suitable opportunity, to introduce them to other physicians" and "to promote their sale in every ethical way"! If the list of physicians' names and addresses which the company sends out as comprising the eastern stockholders is to be relied on, it would seem that many medical men are promoting their sale. In prescribing it is, of course, "necessary to specify 'Dr. Johns' Tablets No. XXX (*Original bottle*).'" As the name is on the bottle, it is not unbelievable that, as the company says in its prospectus, because of "our method of advertising, a large and very profitable business is being created." That the L. D. Johns Company expects to profit by the self-drugging which this method of prescribing fosters is evident:

"Physicians not stockholders in this company suffer from the continual refilling of their prescriptions and from the recommendation of the *preparation prescribed by patients* to others. [Italics ours.—ED.] Our stockholders *benefit* by the refilling of their prescriptions and by these recommendations."

Put baldly the case amounts to this: Physicians who prescribe "Dr. Johns' Tablets" not only are likely to foster self-drugging, but they will reap dividends therefrom. Truly a nice business to be in!

While Bell & Company and the L. D. Johns Company are said to be entirely distinct, they are to be found at the same address at Orangeburg, New York, and as will be seen, the officers of the two companies are more or less related.

BELL & CO.		L. D. JOHN CO.
PRESIDENT	JOHN L. DODGE	PRESIDENT
SECRETARY	GEO. C. TENNANT	VICE-PRESIDENT
VICE-PRESIDENT	CHAS. B. SMITH	SEC'Y & TREASURER

EXPLOITING THE PROFESSION

Nostrum promoters have two simple ways of "working" the medical profession. The first—and the more profitable—is, by lavish distribution of free samples, to get physicians to

1. THE JOURNAL, June 3, 1905 and July 1, 1905; reprinted in the "Propaganda for Reform in Proprietary Medicines."
2. THE JOURNAL, Nov. 4, 1905; reprinted in the "Propaganda for Reform in Proprietary Medicines."

prescribe the blown-in-the-glass "original package" with the inevitable result of large sales direct to the laity. By the second method, which is merely a modification of the first, the physician furnishes the capital for floating the nostrum and then takes his share of the resulting profits. There may not be quite as much money in the second method for the promoter, but then the risks are correspondingly less. If the firm fails, the stockholders are the losers; the promoter is not necessarily "out" anything. From a commercial standpoint, a combination of the two methods is, of course, ideal.

MADAME YALE'S PREPARATIONS

The Latest Series of Nostrums Officially Demonstrated to be Humbugs

A few of the convictions under the Food and Drugs Act have been noted in THE JOURNAL, April 24, 1909. One of the latest "notices of judgment" emanating from the Board of Food and Drug Inspection at Washington refers to the misbranding of a number of preparations marketed by one Maude Yale Bishop Wilson, of New York City, who rejoices in the euphonious trade name of "Mme. Yale."

MME. YALE'S EXCELSIOR SKIN FOOD

One of the preparations was known as "Mme. Yale's Excelsior Skin Food" and was advertised as "a marvelous nourishing product that feeds through the pores of the skin. . . . Can not be duplicated as it is compounded by Madam Yale personally and protected by a chemical secret. . . . The only genuine skin food in the world. It is absolutely guaranteed to remove wrinkles and every trace of age from the face of all who use it."

The government chemist analyzed this "marvelous" product and found that "it consisted of 76.5 per cent. of vaselin which was mixed with fixed oil or fat and zinc oxid, colored with a pink dye and perfumed."

MME. YALE'S EXCELSIOR FRUITCURA

Mme. Yale's Excelsior Fruitcura is, according to madam, herself, "primarily 'Woman's Tonic,' a cure for every ill to which she is sexually heir from Infancy to Old Age. It is Nature's prompt omnipotent Restorative—a Specific for the Generative Organs—Fruitcura cures the so-called 'Incurable.' It is an Elixir of Life—It prevents and cures Prolapsus or Falling of the Womb and all Displacements of Womb or Ovaries."

This also was analyzed and found to consist "of 76.97 per cent. of volatile matter (largely water with 16.66 per cent. of alcohol by volume), 29.71 per cent. of sugar and small quantities of plant drugs."

MME. YALE'S FERTILIZER TABLETS

Still another preparation was "Mme. Yale's Fertilizer Tablets," which were recommended as "A Cure for Obesity" and "A specific for curing . . . all Gastric troubles." The government chemist said that "the tablets were very largely composed of charcoal compounded with potassium bitartrate and sugar."

MME. YALE'S EXCELSIOR HAIR TONIC

"Mme. Yale's Excelsior Hair Tonic" was found to consist "of 15.56 per cent. of alcohol by weight, 82 per cent. of water and small amounts of glycerin, perfumed with bergamot oil." If "Mme. Yale" is to be believed, this mixture of alcohol and glycerin "stops hair falling, cures and prevents Dandruff and all Scalp Diseases and overcomes any hereditary tendency to Baldness or Grayness."

MME. YALE'S EXCELSIOR COMPLEXION BLEACH

Another of the Madam's preparations was claimed to "remove moth patches and all skin discoloration" and in addition "creates natural beauty." But that is not all: "It purifies the entire skin, penetrating its remotest recesses—invigorates nerves, muscles and ligaments—makes the flesh firm and searches out and expels every impurity. Its compound is a chemical secret known only to Madam Yale."

No longer is it a secret for we read "the analysis of the . . . Complexion Bleach, disclosed that it was mainly a saturated solution of borax in orange flower water."

MME. YALE'S ANTISEPTIC

"Mme. Yale's Antiseptic" was also alleged to possess remarkable properties. "Used in the bath is a sure cure and preventive of . . . all diseases of the skin and scalp. It is a perfect Disinfectant, Deodorant, Germicide, Prophylactic and Antiseptic, destructive of all disease germs, bacilli and all bacteria of micro-organisms [*sic*] yet it is 'non-toxic.'" In addition it was a "Sure preventive of typhoid fever."

This destroyer of "all bacteria of micro-organisms" was analyzed by the Bureau of Chemistry and found to consist "of 97.6 per cent. of volatile matter (16.96 per cent. of alcohol by weight, 4 per cent. of formaldehyd, and water), 2.37 per cent. of boracic acid and aromatics."

MME. YALE'S BLUSH OF YOUTH

"Blush of youth is refreshing as concentrated dew, pure as purity—It overcomes all inactivity and imperfection of the skin and underlying structure; spiritualizes the expression and gives the countenance the glow, luster and beauty of Childhood and preserves the morning of life indefinitely." "Blush of Youth" it should be explained is but one more of Mme. Yale's marvelous preparations.

For those who, like Ponce de Leon of old, are looking for something in this line, the analysis of the government chemist may prove interesting: "Mme. Yale's Blush of Youth . . . consisted of 56.15 per cent. of volatile matter (6.30 per cent. of alcohol by weight and 49.85 per cent. of water, colored with a cold tar dye and perfumed), and about 43.85 per cent. of glycerin." This would seem to show that the long-sought fountain of eternal youth consists essentially of a mixture of water and glycerin, with a dash of alcohol.

These various preparations, comprising in all over eighty dozen packages, had been shipped to S. Kann Sons & Co., Washington, D. C., by "Mme. Yale." They were seized by the government and samples of the various preparations were subjected to analyses in the Bureau of Chemistry of the Department of Agriculture. By comparing the analyses with the statements on the labels and circulars enclosed with the several preparations "it was apparent that these statements were false, misleading and deceptive and the preparations misbranded within the meaning of Section 8 of the Food and Drugs Act of June 30, 1906." These preparations of "Madam Yale's" thus furnish the latest addition to the government's galaxy of officially demonstrated humbugs.

Sanitariums and the Acetanilid Habit

To the Editor:—I enclose herewith a "form" letter and question blank which I received recently from St. Louis. I may be entirely too wary but I am suspicious that this is a collection of "statistics" to combat the work of the medical profession in educating the physician and the laity in the harmfulness of acetanilid and similar preparations.

G. H. BENTON, M.D., Chester, W. Va.
Sterling-Worth Sanitarium.

COMMENT: The letter which Dr. Benton encloses is in facsimile form and purports to come from Uriel S. Boone, M.D., of St. Louis, who states that he is "preparing an exhaustive article for publication in a leading medical journal" on the question, "Is acetanilid a habit-forming drug?" To obtain the necessary data Dr. Boone is "writing to every hospital and sanitarium in the United States." Examination of the question blank which accompanies the form letter discloses the fact that information is wanted regarding not acetanilid alone, but also antipyrin and acetphenetidin (phenacetin). The last question asked runs as follows:

> "If your records [of cases of habitual use of these drugs] are incomplete, would you allow a reputable physician to investigate the above mentioned cases so that he could write with positiveness about them, and, if necessary, *make oath to the truth of his report?*" [Italics ours.—ED.]

Dr. Boone opines that the recipients of his queries "may hesitate to answer" the question just quoted, but he trusts that its importance will be evident when he explains that "it is currently reported that the manufacturers of acetanilid, phenacetin, etc., *have decided to prosecute all libelers of these drugs*" [Italics again ours.—ED.] and he wishes to make no

statement that he "can not substantiate under oath." Surely the life of the collector of medical statistics is unusuallly hazardous.

For the purpose of aiding Dr. Boone in his arduous search for truth on the "much mooted question, 'Is acetanilid a habit-forming drug?'" we direct his attention to a work that should prove of invaluable assistance. We refer to Bulletin 126 of the Bureau of Chemistry, entitled "The Harmful Effects of Acetanilid, Antipyrin and Phenacetin." This interesting study to which we have previously (THE JOURNAL, July 24, 1909, p. 303) called attention, records 112 cases of the acetanilid-habit. Of this number, at least 50, or 44.6 per cent. of the cases were those of patients who took proprietary preparations of the drug. From this we would not wish to give any bias to Dr. Boone's statistics. We hardly expect, however, that such will be the case. Dr. Boone's name appears as the author of an article entitled "A Therapeutic Study of Antikamnia and Heroin Tablets"—an article that has been very extensively "quoted" and has been sent out in its entirety by the Antikamnia Chemical Company. Under these circumstances we may be forgiven if we venture the opinion that Dr. Boone is not likely to be unduly prejudiced against "headache tablets" in general and fake "synthetic" coal-tar mixtures in particular. We await with breathless interest the appearance of Dr. Boone's "exhaustive article" and we must confess to some degree of curiosity regarding the name of the "leading medical journal" in which these invaluable data will appear.

Correspondence

The Teaching of Obstetrics

To the Editor:—Interest in the plan which has been advocated for so many years by the American Academy of Medicine looking to a higher standard of medical education is now being intensified by the report of the Carnegie Foundation concerning various schools throughout the country. The requirements of our state boards of health must appeal to the graduate himself. Dr. Arthur D. Bevan's splendid work in the Council on Medical Education and the rapid advance in the requirements of the Association of American Medical Colleges are hopeful signs of the times. All these efforts, it is to be hoped, will soon be focused in a uniform course of study in the various colleges which will harmonize the various teaching faculties to the benefit of the student.

No phase of the very intricate question of division of time in the curriculum of the medical school of to-day is of more interest to the student nor more likely to be unappreciated by the faculty than that pertaining to the relative value of obstetrics as compared with gynecology and surgery. A knowledge gained by correspondence with a number of the eminent teachers of obstetrics and gynecology shows a remarkable unanimity of opinion among them that obstetrics in our colleges does not cover the ground it does abroad nor what it should to give the student a real *Frauen Klinik* instruction; but at present the trend of the average student in the clinical years is to over-emphasize the more spectacular surgical clinic and to minimize research work and clinical diagnosis which must be the foundation of basic principles for the subsequent results in actual bedside practice.

At the recent conference of the subcommittee on curriculum of the clinical years of the Association of American Medical Colleges, held in Atlantic City, the importance of a just distribution of the 2,000 hours of the clinical years was made clear. Professor Reuben Peterson, of Ann Arbor, and I, to whom the subject of obstetrics and gynecology was assigned by President Hoxie, are trying to obtain an expression from the heads of the departments of surgery, gynecology and obstetrics, relative to the proper place of each in the curriculum, and the line of demarcation between them on hazy subjects, as a basis for our report to the next annual meeting of the association, in Baltimore, next March.

When the student is taught principles of diagnosis, and operative surgery is made a postgraduate subject, the young practitioner will more nearly appreciate his instruction. A physician of ten years' experience, a graduate of an Eastern college, came into my office to-day who had never been taught forceps, nor version, nor manikin work while in college, and has always been so honest that he has invariably called on a neighboring friendly consultant to deliver his difficult cases for him. He has now resolved to take a clinical course in obstetrics to prepare himself for his work.

Every student when he graduates and goes out into the world on his own resources realizes his handicap of lack of accurate diagnosis. He does not need a vast demonstration of heroic surgery; he will call a competent surgical expert for that part of his work. What he needs is diagnostic ability in internal medicine and surgery and skill to manage his obstetric patients so that his care of them will not be a reproach to him, nor to the school from which he has graduated.

GEORGE CLARK MOSHER, Kansas City, Mo.

Contagion and Consistency—A Rejoinder

To the Editor:—I note in THE JOURNAL, July 24, a communication from Dr. Emil Roy on "Contagion and Consistency." It is not improper to remark that the writer would do well to show in his statements some consistency with the real facts which are being brought out in investigations of infectious diseases. Such statements as: "Clothing and other fomites are great carriers of infection," and "infected clothing that has been unused for years has been the cause of epidemics," are admitted by authorities, well able to judge, to be made entirely without sufficient grounds, and there is yet to be recorded a single satisfactory substantiated instance that shows such to be the case.

As stated recently by Dr. A. H. Doty, health officer of the Port of New York, in the *American Journal of Medical Sciences*, the old custom of attributing every obscure source of infection to fomites, has too long been in use by the medical profession and has proved a hindrance to the real solution of the problem of infectious diseases.

The work of Kayser, Drigalski, Lentz and Conradi on typhoid; that of von Lingelsheim, Osterman, Flügge, Kolle and Wassermann, Elser and Huntoon and others in cerebrospinal meningitis, and the investigations of the various boards of health, notably Massachusetts and New York, on scarlet fever and diphtheria, indicate in no uncertain manner that the time is passed when but a minor number of infections can be promiscuously laid to clothing, books and what not, and that the greater portion of infections with so-called contagious diseases, can be definitely traced to direct contact of uninfected persons with individuals who either in health or ill with the disease, are harboring and excreting the specific organism.

In place of Dr. Roy's statement that "we understand the germ theory and how diseases are disseminated," it would be well to substitute: "We are beginning to understand the real manner in which diseases are disseminated," and that the theory of fomites in this connection is largely exhausted.

H. S. HAMMOND, M.D., Trenton, N. J.

"Data is"—A Protest

To the Editor:—Correct—not to say elegant—English is most desirable in medical literature as in all other publications. The erroneous use of "data" with a verb in the singular is becoming deplorably frequent. I have seen it lately in no fewer than four instances: in a recent number of THE JOURNAL, by a well-known surgeon; in a medical paper, by a promising young investigator; in a scientific report on the Panama Canal; and in an editorial in one of our best weeklies.

"Data" is of course the plural of "datum," as "strata" is the plural of "stratum." Its use with a verb in the singular, as acknowledged by the editor of the paper alluded to, is due to haste and carelessness. It can hardly be attributed to ignorance in any of the four instances cited. But it ought never to occur.

Is not this one of the cases in which the editor or the proofreader should correct so evident a slip and not allow the error to become habitual? "Where am I at," from being a joke, is in danger of becoming a common locution. The same possibility exists in "data is" unless checked at the beginning.

W. W. KEEN, Philadelphia.

Miscellany

Epidemic of Urticarioid Dermatitis from a Mite in Straw Mattresses

In a preliminary report to the Surgeon-General of the Public Health and Marine-Hospital Service, Drs. Joseph Goldberger and Jay F. Schamberg call attention (Public Health Reports, July 9, 1909, page 973) to an epidemic of urticarioid dermatitis due to a small mite (*Pediculoides ventricosus*) in the straw of mattresses. The epidemic had prevailed in Philadelphia and vicinity since the early part of May, 1909, though the authors state that the disease probably occurs more or less in various parts of the United States. This eruptive disease was first noted among a crew on a private yacht docked in the Delaware river; at about the same time more cases appeared among the crew of other boats and also various private residences and boarding houses in Philadelphia and vicinity.

In nearly every case it was determined that the patients had either recently slept on new straw mattresses or had freely handled the same. The various mattresses had come from one of four different manufacturers, all of whom obtained their straw from the same source. In order to establish experimentally the etiologic rôle of the straw, one of the authors exposed a bare arm and shoulder for one hour between two straw mattresses. Sixteen hours later the characteristic itching eruption occurred. Later three people voluntarily slept on some of the mattresses for one night and each developed the eruption. Untreated siftings from the straw when applied to the axillæ produced the eruption; siftings that had been exposed under a bell jar for one hour to the fumes of chloroform, when similarly applied, proved innocuous. Careful scrutiny of some of the fresh siftings disclosed the presence of a very small mite which, when applied to the axilla, produced the characteristic eruption. The mite was identified by Mr. Nathan Banks of the United States Bureau of Entomology as being "very close to, if not identical with, *Pediculoides ventricosus*."

The eruption consists of wheals, nearly all of which are surmounted by a central vesicle which becomes pustular. The primary efflorescences may be erythemato-urticarial spots or papulo-urticarial lesions, varying in size from that of a lentil seed to that of a finger nail, and are rounded, oval or irregular in shape. The lesions but rarely show the pinkish-white anemic area of ordinary "hives," being usually of a warm rose color. The eruption extends over the neck, chest, abdomen and back, and in a lesser degree over the arms and thighs. Scattered lesions may appear on the face, but the hands and feet are usually free. Some patients exhibit systemic symptoms; malaise, anorexia and sometimes an elevation of temperature of from 99 F. to 102 F. There may be a moderate enlargement of the subcutaneous lymph glands and a transient albuminuria. The condition is likely to be confounded with urticaria, chickenpox or scabies.

Prophylaxis consists in exposing the mattress to the fumes of sulphur or formaldehyd in a vacuum chamber. For the relief of itching and the cure of the cutaneous condition, the authors recommend the following:

℞.	gm.		
Betanaphtolis	2		gr. xxx
Sulphuris præcipitati	4	or	ʒi
Adipis benzoinati	31		℥i

Accidents in Obstetric Operations and Their Forensic Aspect.—O. von Franqué calls attention to the excellent provision adopted in Austria in 1903 for all charges of malpractice against physicians. When a suit is to be brought against a physician for alleged malpractice, the prosecuting attorney must first obtain a certificate on the affair from the faculty of the university, signed by at least nine members of the faculty after two or three have studied the matter thoroughly and made out the certificate. If this certificate testifies that there has been no criminal malpractice, the affair ends there so far as the prosecuting attorney is concerned, and it does not become public, although the injured parties may still bring a civil suit, but they generally realize the hopelessness of their case and desist. By this means physicians are protected against heedless bringing of suits which tarnish their professional reputation even if terminating in acquittal. Franqué contributes an article on the subject to the *Sammlung klinischer Vorträge*, No. 524, reviewing a number of experiences in this line to which he had to testify while in the medical faculty at Prague. In one case the obstetrician mistook a breech for a frontal presentation in a difficult labor and attempted to perforate, supposing the child was dead. It proved to be alive and was born with a wound in the thigh and transient peroneus paralysis, but no other injury either to mother or child. The parents sent a lawyer to the physician to demand damages, but he threatened a counter suit for blackmail and the matter was dropped. In another case the obstetrician drew out the entire uterus and adnexa, his hand entering through the posterior vault of the vagina and a long rent in the uterus, when he supposed he was merely releasing the placenta. In another case of laceration of the uterus the obstetrician left the patient before delivery of the placenta, saying that nothing more could be done at present. In a fourth case, a vesicovaginal fistula following a forceps delivery was ascribed to the physician's carelessness. The faculty certificates in all these cases stated the grounds why the physician was not responsible for the fatality. The public never learned of the affair in some cases. Franqué urges all obstetricians to make an unfailing practice of writing out in detail the next day the complete history of the case when an accident of this kind has occurred. Such a candid, objective history, made out before there is any question of legal proceedings, has great influence on the authorities and experts, and will often turn the scale against any assumption of negligence. The favorable outcome in the first of the above cases was evidently due to this history of the case written spontaneously and objectively while the data were fresh.

Problem of the State in the Care of the Insane.—The task which a state must face in the care of its insane is outlined by Adolph Meyer in the *American Journal of Insanity*, April, 1909, follows: 1. The care of the insane is to be organized so that care is given at as early a date as possible, that is, before the time when commitment is now thought necessary. 2. A system of notification of a mental health board is to make organized activity possible; and adequate provisions with hospital nurses, not policemen and jails, must be available, pending the transfer to the specially organized hospitals. 3. The special hospital must have adequate treatment divisions where it is possible to become thoroughly acquainted with all the facts about the patient before his transfer into the ordinary observation wards for a more lasting stay. 4. Even in the wards for the supposedly more chronic cases, standards must be maintained that provide for the 25 per cent. or more of recoverable cases in which illness lasts more than a year. 5. Adequate provisions must be made to become thoroughly acquainted with the outside conditions under which the disorder developed, and with the possibilities of an adjustment before the patient returns, so that such help or guidance as may be advantageous to the patient and to his friends on his return from the hospital may be extended. 6. General organizations of work must be carried out in the locality, according to its needs, among the various types of the community, not only with regard to checking alcoholism and the spread of syphilis, but also with regard to hygienic methods of living generally; emphasis must be laid on keeping the minds balanced with a due share of recreation and rest, and satisfaction with the returns of every-day toil.

Ocular Manifestations of Hysteria.—C. E. Finlay of Havana contributes an article to the *Revista de Med. y Cirugia*, May 10, protesting against the prevalent disregard of the ocular manifestations of hysteria. It is probably, he says, the reaction from the excessive importance ascribed to the ocular manifestations by the clinicians of the Paris Salpêtrière school. He states that he has encountered six typical cases among 13,000 patients, and describes these six cases in detail. In none were there any pupil phenomena. The first patient was a man of 33 with amblyopia without ocular lesions, con-

centric contraction of the visual field and incomplete color blindness. He had had a similar attack of amblyopia a year before. The functioning of the eye soon returned to normal under a course of tonics, except that the contracted visual field and dyschromatopsia persisted for several months. The second patient was a boy of 12 presenting concentric contraction of the visual field and other signs of hysterotraumatism following a severe blow in the left temple. The third patient was a young physician with diplopia: powerful iodid treatment had been pushed on the assumption of possible syphilis. Paralysis of both internal recti seemed the only diagnosis until the concentric contraction of the visual field and partial color blindness revealed the hysteric origin of the trouble. The patient refused to accept this diagnosis but suspended treatment and recovery soon followed. Another patient was a young man with one useless eye. The other eye was normal except for hypermetropia, but it was hit with a snowball and he had to stay in his room for two months, after which vision in this eye was much reduced. The visual field was concentrically contracted and there was partial color blindness, but the amblyopia rapidly subsided under rest, bromids and tonics. His two other patients were a woman of 27 and a girl of 11, both with the bilateral concentrically contracted visual field; the girl presented also monocular polyopia and nystagmus.

Maydl's Operation for Exstrophy of the Bladder.—J. Jellinek of Brünn, Austria, reviews the experiences of the last fifteen years with Maydl's operation for exstrophy of the bladder. He tabulates the details of 177 cases as reported by 92 different surgeons—including a number of Americans—and answers the objections that have been made to the Maydl technic. None of them has any weight, he shows, except the possibility of ascending infection, and this is counterbalanced by the superior functional results, the high mortality of the non-operated from pyelonephritis or malignant tumors which seem to display a predilection for the exposed bladder mucosa, and by the large number of permanently cured patients. The records show 17 cured for over 2 years; 13 for over 3; 7 for over 4; 25 for from 5 to 9 years, and 1 each for 10, 11 and 12 years. The age at which the operation is performed is an important factor in the outcome; the mortality under 5 was 41 per cent.; between 6 and 10, 18 per cent.; between 11 and 20, 32:5 per cent.; between 21 and 25, 50 per cent., and above this age, 72 per cent. The mortality from pyelonephritis also increased with age, from 3 and 9 per cent. under 15 to 54 per cent. after the age of 25. Sooner or later, 25 per cent. of the patients who had been operated on succumbed to this. Careful selection of the cases for operative treatment and improved technic in means to keep the urine and stools separate will make the outcome still better. The illustrated monograph appeared originally in the *Casopis lekaru ceskych* not long ago. The various other methods for treatment of exstrophy of the bladder and the ultimate outcome are described and compared with the Maydl "derivation" technic. Only four of all the patients operated on were women, and none of the women operated on for exstrophy of the bladder conceived later, although in one case the Maydl operation had been done for a tuberculous bladder affection and the girl married and bore a child later. There are 10 cases on record, he says, of pregnancy in women with exstrophy of the bladder, unoperated; as a rule, there are usually other malformations which interfere with conception.

Changes in the Duodenal Glands of the Rabbit After Ligation of the Duct of Wirsung.—A Marassini, in his reported experiments (*Arch. ital. de biol.*, 1909, xlix, 1) paid particular attention to those glands of the normal duodenum which bear a resemblance to the acini of the pancreas and which are known as the pancreas duodenalis. Marassini observed that within fifteen days after ligature of the pancreatic duct, there appeared in the submucosa of the duodenum a definite layer of tubuli. These tubuli in the main were composed of cells with intensive staining protoplasm. The remaining tubuli with bright transparent elements were now comparatively few in number. In the normal animal the tubuli with clear transparent cells greatly preponderate over the tubuli with intensively staining cells. After ligation of the duct, however, the proportion of the two kinds of tubuli are just reversed. With high magnification the intensively staining pancreas-like tubuli are seen to be made up of pear-shaped cells which bear a remarkable resemblance to the cells of the pancreatic acini. The similarity is further made evident by the presence in the cells of the deeply staining tubuli of a great many fuchsin-staining granules. These granules are homologous to the zymogen granules (i. e., granules from which the various ferments of the pancreatic juice are directly formed) of the acinous cells of the pancreas, and in the experimental animals their number was very greatly increased in the cells of the pancreas duodenalis. It is believed that these tubules with deeply staining cells represent structures of a nature similar to that of the acini of the normal pancreas and that after ligation of the pancreatic duct they greatly increase in number and take over the function of secreting pancreatic ferments to such an extent that they entirely compensate for the loss of the pancreatic secretion by ligation.

Orthodontia.—The opinion that a revolution in dentistry is taking place with the development of orthodontia is expresssed by Dr. Richard Cole Newton in the *Popular Science Monthly*, July, 1909. He describes the results obtained by straightening teeth and securing their proper arrangement in the jaw as adding greatly to human beauty, health and efficiency. The position of the teeth is held to determine the shape of the jaws, so that a jaw ordinarily held to be indicative of degeneracy assumes a form characteristic of the highest human type if the teeth are properly manipulated at the proper time. The opinion that man is gradually evolving into a toothless animal is given little support by results secured by these modern artists of the human face. The evidence presented by Dr. Newton, especially that in pictorial form is very convincing and serves to emphasize the fact that dentistry is a specialty of medicine with which every physician should be more familiar. The family physician should recognize the importance of the preservation of the teeth and should extract one only for very good reasons. The relations of the teeth to good digestion are properly emphasized by Dr. Newton, but it may be well to suggest that as the majority of digestive complaints are of functional and even of psychic character it is not safe to conclude without sufficient investigation that a particular case of gastric trouble owes its origin to poor teeth. On the other hand, there is reason for the view that both the poor teeth and the dyspepsia depend on an underlying fault of the nervous system. This view is supported by the frequent presence of the changes in the skeleton which constitute the signs of Stiller's asthenia congenita. Orthodontia may restore the teeth and jaws to proper form, but it is hardly likely to remove the congenital degenerative tendencies which form the basis of modern neurasthenia.

The Pressor Principles of Placental Extracts.—An examination of the alcoholic extracts of the human placenta was undertaken by Otto Rosenheim (*Jour. Physiol.*, 1909, xxxviii, 339) with the view of isolating the active principles observed by Dixon and Taylor (*Brit. Med. Jour.*, 1907, ii, 1150) to produce on intravenous injection a rise of blood pressure and a contraction of the pregnant uterus, and to establish the identity or otherwise of the active principles of placental extract with those of adrenalin or similar substances. By none of the well-known methods used in isolating adrenalin was a product obtained which gave any of the reactions of adrenalin. Furthermore, when care was taken to prevent bacterial putrefaction, the pressor principles were absent from extracts of placentaa prepared by any one of half a dozen methods, including the method of Dixon and Taylor. Under all conditions which freely permit autolytic processes to go on, with precautions against bacterial infection, the active principles are not produced. The method of Dixon and Taylor permits of bacterial infection in which case the active pressor principles are present. Rosenheim concludes: "Fresh human placenta does not contain any pressor principle. The pressor principles of placental extracts, prepared according to Dixon and Taylor, are products of initial putrefaction. The autolytic enzymes of the placenta, without the help of micro-

organisms, are unable to produce pressor substances. Several pressor bases were isolated from putrefying placenta, the most active of which was identified as p-hydroxyphenylethylamin, while the identity of another with isoamylamin is most probable. These are identical with those found by Barger and Walpole in putrid meat."

The Ideal Fly Killer.—Now that so much is being said about the necessity of extirpating house flies, a communication to *Nature* of May 13 is of interest. Dr. Alexander Hill, writing from Mentone, says that the most efficient fly destroyer with which he is acquainted is a dilute solution of formaldehyd. If two teaspoonfuls of formalin (40 per cent. formaldehyd) be added to a soup-plate filled with water, the flies go to it to drink, especially in the early afternoon. Some die in the water, others fall in the neighborhood of the plate, and others elsewhere in the room. With a single plate of the solution on the kitchen table, he says, hundreds of dead flies are daily swept up from the floor. He is writing from the south of France where screening does not seem to be so universal, or flies are especially abundant. It is somewhat strange, as he says, that so small a dose should prove fatal when taken into the fly's alimentary canal. To free a room of flies by vaporizing formalin the air would have to be rendered irrespirable by a human being. Formaldehyd in very dilute solution has no particular odor and he gives this fact of its deadliness to flies as an evidence that their olfactory sense must be very similar in this respect to our own. The solution neither attracts nor repels flies, for a similar plate containing only pure water will be equally visited by them. The formalin may be added to a dish of water containing flowers, if equally accessible to the flies, with the same result as far as fly killing is concerned; the plants are not affected other than as slightly in regard to their tints by the formalin. Though not specially intended as such the communication is very apropos as a sanitary item at the present time.

Tabes and Pregnancy.—MM. H. Dufour and Cottinot report (*Bull. et mém. Soc. méd. d. hôp. de Paris*, Feb. 5, 1909, p. 211) the case of a woman, aged 29, secundipara, and three months pregnant, who had never shown any signs of tabes (unless we consider excessive vomiting during her first pregnancy and on one other occasion to be of that nature), but who was suddenly taken with uncontrollable emesis. Examination revealed a number of tabetic symptoms, occurring all at once at this time. Previously the patient had considered herself in perfect health and had done her work. She was temperate and there had been no history or signs that could be referred to syphilitic infection. Neither she nor her husband could give any history of the pre-existence of the inco-ordination or other tabetic symptoms. One fact, however, that was learned is significant. In January, 1908, she had severe attacks of vomiting and a laparotomy was performed in the left iliac fossa, apparently on a diagnosis of bowel obstruction, which was not found and the wound was closed and she recovered. It is more than probable that this was a simple gastric crisis of tabes, but it suggests an important practical point in the diagnosis. The excessive reaction of pregnancy on tabes is, however, the chief thing of interest in the case. Another similar case is briefly mentioned and reference is made to still others reported by Heitz and others in which the symptoms of tabes were aggravated by pregnancy. Mercurial injections brought the first patient reported by the authors to term.

Fixation Abscesses in Treatment of Lead Poisoning.—J. Carles of Bordeaux has been conducting experimental research, the results being confirmed by clinical experience, which reaffirms the way in which metallic salts circulating in the organism are attracted to an inflammatory focus and are eliminated in the pus. In some of the dogs injected with turpentine after chronic lead poisoning to cause the "fixation abscess," the pus contained a larger proportion of lead than could be found in equal weights of brain or liver tissue. The turpentine was not injected until after the lead had been deposited in the viscera, the experiences showing that the leucocytes were able to recapture the lead and transport it to the fixation abscess; the kidneys and blood contained only traces, while 25 gm. of pus contained 0.003 gm. of lead sulphid. In the two clinical cases related in his communication in the *Bull. Gén. de Thérapeutique*, Feb. 8, 1909, the pus did not contain a very large proportion of lead, but every little may help in the serious cases, he says.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF LEAD POISONING

To the Editor:—I wish to know the best treatment for plumbism, such as is found around a lead smelter and in lead mines; especially for a patient who has gone from 3 to 6 days without a bowel movement. I have a smelter company's practice, and have from 10 to 100 cases a month. I have never been able to find any work on it in English.

J. M. SPAULDING, M.D., Silver City, Utah.

ANSWER.—The treatment of lead poisoning includes the prevention of further poisoning by removal of the cause; especial care should be taken to secure cleanliness and especially to prevent eating with soiled hands. The elimination of the poison is favored by copious ingestion of water, warm baths, and the administration of potassium iodid in doses of 0.3 gm. (5 grains) three times a day.

The symptoms must be treated as they arise. Constipation should be relieved by the milder laxatives, such as magnesium sulphate, senna, etc., if possible. Sometimes more active cathartics must be given. For paralysis full doses of strychnin simultaneously with large doses of potassium iodid must be given. The faradic current is useful in paralysis of the extremities. Colic should be relieved by morphin hypodermically. This sometimes relieves the constipation at the same time.

In the report of the Committee on Social Betterment of the President's Homes Commission, Dr. William J. Manning's article on "Plumbism" is reproduced. In this article Dr. Manning says: "In acute cases of lead poisoning the treatment consists in the administration of alkaline carbonates, soap, soluble sulphates, sodium chlorid, etc., washing out the stomach with large drafts of water, etc. Alum has been given, and at one time was considered almost a specific. Sweet oil and castor oil will be found useful. Milk should be taken in large quantities. The idea is first to combat the symptoms and then to eliminate the lead. Opium can be given for pain. Warm sulphureted baths are very beneficial. They can be made by dissolving 4 ounces of potassium sulphid in 30 gallons of water in a wooden tub. These baths discolor the skin from the formation of lead sulphid, and should be repeated every few days until this effect ceases. During each bath the patient should be well washed with soap and water to remove discoloration."

In Great Britain dangerous trades are regulated by special provisions in the factory and workshop act. Under the head of "Lead Smelting Works," the following duties of employers are prescribed:

"*Duties of Occupiers:* (1) They shall provide respirators and overall suits for the use of all persons employed in cleaning the flues, and take means to see that the same are used. (2) They shall arrange that no person be allowed to remain at work more than two hours at a time in a flue—a rest of half an hour before re-entering will be deemed sufficient. (3) They shall provide sufficient bath accommodation for all persons employed in cleaning the flues, and every one so employed shall take a bath before leaving the works. (4) They shall provide washing conveniences, with sufficient supply of hot and cold water, soap, nail-brushes and towels."

To insure the carrying out of these rules, the workmen are held liable should they fail to comply with them, a fine not exceeding two pounds ($10) being imposed. Since the enforcement of these preventive measures there has been in England a most marked reduction in the morbidity and mortality from lead poisoning.

A work that might be of interest to our correspondent is "Lead Poisoning," by Thomas Oliver, published by Young J. Pentland, Edinburgh.

SHAMPOO FORMULAS

To the Editor:—Will you kindly tell me what is a good formula for a shampoo, and what other soft soap besides green soap is on the market? How are these liquid soaps made? Are they merely boiled, dilute green or soft soap? ENQUIRER. Chicago.

ANSWER.—While many proprietary soft soaps and prepared shampoos are for sale, none is superior to the official soft soap (Sapo Mollis U. S. P.) in convenience or effectiveness. This may be found stronger than is desired and will be too harsh on the hair in some cases. A good castile soap may be made soft by being cut up and boiled with a little water. For convenience a solution of soft soap in alcohol to which a little oil of bergamot or other essential oil has been added is often used. The National

Formulary contains a Compound Tincture of Green Soap, which consists of soft soap 150 gm., oil of cade 20 c.c. and alcohol enough to make 1,000 c.c. The official soft soap is made by treating linseed oil with an excess of potassium hydroxid and small quantities of alcohol and water are added to aid in the saponification. The various preparations of liquid soap which are found on the market differ chiefly from the official soft soap in that other oils than linseed oil may have been used in their preparation and also in the varying alcohol and water content.

The following formulas of liquid egg shampoos were given in the Therapeutic Department of THE JOURNAL March 14, 1908; they are both from the *Druggists Circular:*

Soft soap	2 ounces
Whites of	4 eggs
Potassium carbonate	1 ounce
Tar water	1 pint
Glycerin	2 ounces
Orange flower water, enough to make	2 ounces

Beat the whites of the eggs into a froth while gradually adding the tar water. Dissolve the soap in a mixture of glycerin and six ounces of orange flower water. Mix the two solutions and make up to two pints with orange flower water.

Also:

Transparent soap	4 ounces
Glycerin	2 ounces
Whites of	3 eggs
Tincture of green soap	1 ounce.
Oil of rosemary	45 minims
Oil of rose geranium	30 minims
Water, enough to make	2 pints

Melt the soap in twelve ounces of water, add the glycerin and stir until cool; then add the green soap and the oils. Mix the whites of the eggs with eight ounces of water and stir into the soap mixture. Shake well, let stand for twenty-four hours, and strain through flannel.

BUTTERMILK THERAPY AND MILKS AS FOOD

To the Editor:—In your excellent editorial on buttermilk therapy occurs the sentence, "it is not likely that any one would live on such a diet except for experimental purposes." Now so far as I know every pastoral people compelled to use milk largely as a diet does ferment its milk by some complicated process. This is so unlikely to happen that it demands consideration. I would be glad to know if there is any exception to it, or if you can suggest any explanation other than the evolutionary one, i. e., that every race that has tried to live on sweet milk has died out. Clinical experience has inclined me to the theory that intestinal toxemia is more likely to occur from sweet milk than from sour. I make my sour milk, by the way, with hydrochloric acid rather than with a ferment. I am of course aware of the unreliability of clinical impression and agree that the theory should be tested in every way before it is stated as a fact. But the extensive use of ferments among semicivilized people seems to me an item of evidence which should be considered.

JOHN W. BOYCE, M.D., Pittsburg.

ANSWER.—To the great majority of adults, sweet milk becomes peculiarly, often unbearably, distasteful when taken in amounts that anywhere nearly represent a sufficient exclusive diet. It hardly seems probable that any race has even "tried to live on sweet milk" alone, or even approximately so. Furthermore, milk of any kind or any preparation of it is at best a poor food as an exclusive diet for anything but an infant. We know very well, clinically, that babies a year or more old will become pale and flabby when fed on milk alone, possibly largely because, as Bunge has pointed out, milk in itself contains too little iron. There are other familiar objections to a sole milk diet.

Some of the fermented milks, notably koumiss, contain considerable quantities of alcohol and all of them have a decided taste. It would seem more probable that the reason fermented milks are used so freely among pastoral peoples would be that they have an acquired taste for it as a beverage, as some persons have for coffee, tea or beer, rather than that they ascribe superior nutritive or life-prolonging virtues to it as compared with sweet milk. There is a good deal of attractive theory but not a great amount of well-established fact concerning the effect of fermented milk in "intestinal toxemias," prolongation of life, etc. It has, for example, by no means been established that the striking results of buttermilk feeding in infancy are due to the presence of either the germs or the lactic acid, and not to the fact that a fat-free milk is being used.

TREATMENT OF COATED TONGUE

To the Editor:—What will clean up a persistently furred or coated tongue, one that stays coated all the time, is broad, flabby and moist, with a bad taste in the mouth every day in the year? What is the cause of this? Hepatic stimulants, tincture of nux vomica, hydrochloric acid and Canadian hemp do very little good. I should like to hear from some who have had success in such cases. S. A. C., Virginia.

ANSWER.—Without more particulars it is hard to suggest a diagnosis, but some general rules may be given. Various explanations have been given of the coating on the tongue. The chief are: 1. The tongue is a part of the cutaneous system and is affected like the skin by general diseases, so that the coating is similar to an eruption of the skin. In such cases the eruption often persists after the disease which caused it has passed away. 2. The coating on the tongue may be due to local disorders of the teeth, oral mucous membrane, throat or nose. 3. The coating may rarely be due to some disease of the stomach but as a rule there is no direct relation between disease of the stomach and the fur on the tongue. 4. The coating on the tongue seems frequently to be related to the condition of the bowels, being probably the expression of a general poisoning resulting from the absorption of products of putrefaction by the intestinal mucous membrane.

In our correspondent's case he will need to seek out the cause. An examination of the stomach contents should be made, as the cause may lie in the stomach. If local disease is present it should be treated. Intestinal putrefaction should be prevented by the reduction or removal of protein, especially meat, from the diet, by the use of carbohydrate food, such as bread, corn-starch, cereals, etc., and by the use of laxatives, buttermilk, and if necessary intestinal antiseptics (phenylis salicylas). Locally the tongue should be cleaned with the tooth brush, and the use of an alkaline liquid like the liquor antisepticus alkalinus will facilitate the removal of mucus.

CUMULATIVE EFFECTS OF SUPRARENAL EXTRACT

In THE JOURNAL for July 31, 1909, a query was answered regarding the "Cumulative Effects of Suprarenal Extract." Further investigation of the subject has furnished the following additional data: Bouchard and Claude, 1902, experimented with a small number of rabbits, finding that they usually died from injections of 1 to 2 mg. per kilo, but if sublethal doses were first injected, as much as 4 mg. per kilo could be withstood by the animal. Abderhalden and Thies injected white mice with dextrosynthetic adrenalin, finding that it produced a resistance to doses of l-adrenalin 4 to 6 times that of the dose usually lethal.

Schultz of the Hygienic Laboratory of the Public Health and Marine-Hospital Service gives data in a bulletin entitled "Quantitative Pharmacological Studies. Adrenalin and Adrenalin-like Bodies," which indicate that small doses increase the animal's tolerance for subsequent doses of adrenalin. It is well known that small quantities of adrenalin sufficient to cause a rise in blood pressure have but a transient effect and do not influence the effect of subsequent doses if the latter are injected a few minutes after the return of the blood pressure to normal. It would seem from such data that initial injections of adrenalin either do not influence the effects of subsequent injections, or when they do so they render the animal more tolerant to its toxic action.

The Public Service

Medical Corps of the Navy

Changes for the week ended Aug. 7, 1909:

Minter, J. M., asst.-surgeon, ordered to the Naval Recruiting Station, Pittsburg, Pa.

Harlan, T., asst.-surgeon, detached from the Naval Recruiting Station, Pittsburg, Pa., and ordered to the Naval Hospital, Mare Island, Cal.

Harlan, T., asst.-surgeon, detached from the Naval Hospital, Mare Island, Cal., and ordered to the Asiatic Station, via the Naval Recruiting Station, Oklahoma City, Okla., and ordered home to wait orders.

Donelson, M., asst.-surgeon, detached from temporary duty in the Bureau of Medicine and Surgery, Navy Department, and ordered to the Naval Recruiting Station, Oklahoma City, Okla.

McMullin, J. J., acting asst.-surgeon, ordered to the Naval Hospital, Narragansett Bay, R. I.

Murphy, J. F., P. A. surgeon, ordered to the Naval Hospital, Las Animas, Colo.

Wilson, H. D., surgeon, detached from the *Kentucky* and ordered to resume other duties.

Shaw, H., P. A. surgeon, detached from the Naval Station, Culebra, W. I., and ordered to the Navy Yard, Washington, D. C.

Rodman, S. S., P. A. surgeon, orders of July 27, detaching from the Naval Recruiting Station, Indianapolis, and ordering to the Naval Recruiting Station, Boston, *revoked.*

Stalnaker, P. R., P. A. surgeon, detached from the Navy Yard, Washington, D. C., August 10, and ordered to the Naval Station, Culebra, W. I.

Curtis, L. W., medical inspector, commissioned medical inspector from July 1, 1909.

Rodman, S. S., P. A. surgeon, detached from the Naval Recruiting Station, Indianapolis, and granted leave until September 25.

Eytinge, E. O. J., P. A. surgeon, commissioned passed assistant surgeon from May 24, 1908.

Munger, C. B., P. A. surgeon, commissioned passed assistant surgeon from July 7, 1908.

Medical Department of the Army

Changes for the week ended Aug. 7, 1909:

Connor, Clarence H., capt., granted leave of absence for four months, when relieved from duty in the Philippine Division; may return to the United States via Europe.

Miller, Edgar W., capt., granted leave of absence for 7 days.

Nichols, Henry J., 1st lieut., ordered to report at San Francisco, for examination for promotion, on completion and expiration of leave of absence, will proceed to New York City for duty as Attending Surgeon.

Persons, Elbert E., major, in addition to present duties, temporarily assigned as assistant to Chief Surgeon, Department of the East, and attending surgeon, headquarters, Department of the East.

Collins, Christopher C., major, granted leave of absence for four months.

Barber, John R., 1st lieut., relieved from duty at the Army Medical Museum, Washington, D. C., in time to proceed to San Francisco, and sail Oct. 5 for Philippines service; granted leave of absence for one month.

Purviance, William E., major, granted leave of absence for 25 days.

Woolley, Herbert C., 1st lieut., M. R. C., relieved from duty at Fort Davis, Alaska; will proceed home and then stand relieved from active duty in the Medical Reserve Corps.

Buchsbaub, Maurice, 1st lieut., M. R. C., relieved from duty at Fort D. A. Russell, Wyo., in time to proceed to San Francisco, and sail Sept. 5 for Philippine service.

Coffin, Harold L., 1st lieut., M. R. C., granted an extension of one month to his leave of absence.

Ware, William H., dental surgeon, ordered to Vancouver Barracks, Wash., for duty, at the expiration of his present leave of absence.

Boak, S. Davis, dental surgeon, relieved from duty at Vancouver Barracks, Wash., and ordered to Fort McDowell, Cal., for duty.

Lauderdale, Clarence E., dental surgeon, ordered to visit in succession for temporary duty, Fort Huachuca, Ariz., Whipple Barracks, Ariz., Fort Apache, Ariz., and Fort Wingate, N. M., returning then to Fort Logan, Colo.

Casaday, George H., dental surgeon, ordered from Fort Shafter, H. T., to the Presidio of Monterey, Cal., for temporary duty.

Public Health and Marine-Hospital Service

List of changes for the seven days ended August 4, 1909:

Bailhache, Preston H., surgeon, placed on "waiting orders" from November 1, 1909.

Banks, Charles E., surgeon, on being relieved by Surgeon E. K. Sprague, directed to proceed to Portland, Me., and assume command.

Kalloch, P. C., surgeon, on being relieved by Surgeon Charles E. Banks, directed to proceed to Memphis, Tenn., and assume command.

Wasdin, Eugene, surgeon, on arrival of Surgeon P. C. Kalloch, relieved from duty at Memphis, Tenn.

Brown, B. W., surgeon, granted a five days' leave of absence from July 29, 1909.

Brown, B. W., surgeon, on being relieved by P. A. Surgeon R. H. Creel, directed to proceed to Vineyard Haven, Mass., and assume command.

Sprague, E. K., surgeon, on being relieved by Asst.-Surgeon W. M. Bryan, directed to proceed to Key West, Fla., and assume command.

Lavinder, C. H., P. A. surgeon, granted 14 days' leave of absence from August 1, 1909.

Foster, M. H., P. A. surgeon, granted 1 day's leave of absence, July 27, 1909, on account of sickness.

Warren, B. S., P. A. surgeon, granted 14 days' leave of absence from August 1, 1909.

Creel, R. H., P. A. surgeon, on the arrival of Asst.-Surgeon James P. Leake, directed to proceed to Louisville, Ky., and assume temporary command.

Ashford, F. A., asst.-surgeon, directed to proceed to Washington, D. C., and report to chairman of board of medical examiners to determine his fitness for promotion to the grade of Passed Assistant Surgeon.

Herring, R. A., asst.-surgeon, leave of absence granted May 20, 1909, for 1 month and 4 days from June 5, 1909, amended to read 1 month and 6 days from June 5, 1909.

Bryan, William M., asst.-surgeon, relieved from duty at South Atlantic Quarantine Station, and directed to proceed to Southport, N. C., and assume command of the Cape Fear Quarantine Station.

Hasseltine, Hermon E., asst.-surgeon, directed to proceed to Buffalo, N. Y., and report to the medical officer in charge for duty.

Hunter, W. R., acting asst.-surgeon, granted 2 days' leave of absence from August 5, 1909.

Knight, Carlisle P., acting asst.-surgeon, granted 30 days' leave of absence from October 1, 1909.

Porter, Joseph Y., Jr., acting asst.-surgeon, granted 30 days' leave of absence from August 4, 1909, without pay.

Richter, H. C., acting asst.-surgeon, granted 15 days' leave of absence from July 29, 1909.

Story, H. C., acting asst.-surgeon, granted 30 days' leave of absence from September 1, 1909.

Weeks, Alanson, acting asst.-surgeon, leave of absence granted July 9, 1909, for 30 days from July 10, 1909, amended to read 30 days from July 19, 1909.

BOARD CONVENED

Board of medical officers convened to meet at the Bureau, August 5, 1909, for the examination of Asst.-Surgeon F. A. Ashford to determine his fitness for promotion to the grade of Passed Assistant Surgeon. Detail for the board: Asst.-Surgeon-General J. W. Kerr, chairman; Surgeon W. P. McIntosh; P. A. Surgeon J. F. Anderson, recorder.

Health Reports

The following cases and deaths of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended August 6, 1909:

SMALLPOX—UNITED STATES

Illinois: Danville, July 18-25, 2 cases.
Indiana: Fort Wayne, July 10-17, 3 cases.
Kansas: Kansas City, July 10-17, 1 case.
Kentucky: Lexington, July 17-24, 1 case; Newport, July 18-25, 1 case.
Louisiana: New Orleans, July 17-24, 1 case.
Michigan: Detroit, July 17-24, 1 case; Kalamazoo, 1 case.
Minnesota: Duluth, July 17-23, 3 case.
Missouri: St. Louis, July 17-24, 1 case.
Montana: Butte, July 15-22, 3 cases.
Ohio: Dayton, July 17-24, 1 case.

SMALLPOX—INSULAR

Philippine Islands: Manila, July 5-12, 1 case, 1 death.

SMALLPOX—FOREIGN

Algeria: Algiers, June 1-30, 2 deaths.
Brazil: Rio de Janeiro, June 13-27, 3 cases, 5 deaths.
Canada: Halifax, July 10-17, 2 cases.
China: Amoy, June 12-26, 19 deaths.
Egypt: Cairo, June 10-24, 3 cases, 1 death.
India: Calcutta, June 12-19, 7 deaths; Madras, June 19-25, 1 death; Rangoon, June 12-19, 3 deaths.
Indo-China: Saigon, May 29-June 12, 4 cases, 3 deaths.
Italy: Naples, June 4-11, 29 cases, 8 deaths.
Java: Batavia, June 5-19, 3 cases.
Mexico: Mexico City, May 29-June 26, 43 deaths; Monterey, June 11-18, 3 deaths.
Portugal: Lisbon, July 4-18, 22 cases.
Russia: Libau, July 3-10, 1 case, 1 death; Riga, 6 deaths; St. Petersburg, May 8-15, 20 cases, 5 deaths, June 19-July 3, 34 cases, 8 deaths.
Spain: Barcelona, July 5-12, 4 deaths; Vigo, July 3-10, 1 death.
Turkey: Constantinople, June 27-July 4, 1 case; Smyrna, May 27-July 1, 13 deaths.

YELLOW FEVER

Ecuador: Guayaquil, June 12-26, 9 deaths.

CHOLERA—INSULAR

Philippine Islands: Provinces, June 5-12, 77 cases, 52 deaths.

CHOLERA—FOREIGN

China: Amoy and vicinity, June 12-26, 3 cases, 7 deaths.
India: Calcutta, June 12-19, 23 cases; Madras, June 19-25, 1 death; Rangoon, June 12-19, 3 deaths.
Indo-China: Saigon, May 29-June 12, 5 cases, 2 deaths.
Russia: July 10-17, 1,020 cases, 421 deaths; St. Petersburg, 844 cases, 341 deaths.

PLAGUE—UNITED STATES

California: Alameda County, Sunol, Aug. 2, 1 case.

PLAGUE—FOREIGN

Chile: Antofagasta, June 26, 2 cases in lazaretto; Iquique, June 30, 2 cases in lazaretto.
China: Amoy, June 12-26, 210 deaths; Canton, July 5-19, 30 deaths.
Ecuador: Guayaquil, June 12-26, 9 deaths.
India: General, June 12-19, 885 cases, 766 deaths; Calcutta, 67 deaths; Rangoon, 36 deaths.
Indo-China: Saigon, May 29-June 12, 5 cases, 5 deaths.
Japan: Kobe, June 26-July 3, 1 case, 1 death; Yokahama, 5 cases, 1 death.
Peru: June 26-July 3, 26 cases, 12 deaths.

Association News

NEW MEMBERS

List of new members of the American Medical Association for the month of July, 1909:

ALABAMA

Farish, L. B., Atmore.

ARIZONA

Sloane, H. F., Courtland.
Troutman, G. D., Tucson.

ARKANSAS

Blue, Julian B., Parkin.
Thiolliere, A. C., Pleasant Plains.

CALIFORNIA

Chambers, W. E., Oakland.
Compton, G. W., San Diego.
Deininger, Marguerite, Pt. Richmond.
Haworth, M. W., Sacramento.
Montgomery, C. H., Los Angeles.
Rees, Rees Bynon, Bakersfield.
Shaw, F. E., Sacramento.
Welsh, Prudence M., Long Beach.
Williams, Edith H., San Francisco.
Wood, E. H., Riverside.

COLORADO

Adkinson, R. C., Florence.
Bowie, M. R., Paonia.
Burkhard, E. D., Ludlow.
Driscoll, W. E., Cripple Creek.
Hayes, A. I., Victor.
Krohn, M. J., Denver.
Van Norman, H. C., Denver.
Wallace, F. E., Pueblo.

CONNECTICUT

Bissell, Wm., Lakeville.
Bissell, Wm. B., Lakeville.
Bodley, G. H., New Britain.
Kingsbury, Wm. S., Glastonbury.
Noxon, G. H., Darien.
Patterson, D. C., Bridgeport.
Tracey, W. J., Norwalk.

FLORIDA

Newsom, Wm. V., Ocala.

GEORGIA

Denton, J. F., Atlanta.
Ellis, J. N., Atlanta.
Hurt, J. S., Atlanta.
White, J. C., Atlanta.

ILLINOIS

Aiken, A. W., Chicago.
Braude, Morris, Chicago.
Brewster, B. M., Fieldon.
Buckmaster, Frank, Effingham.
Burry, Jas., Chicago.
Diddy, L. C., Oswego.
Everett, E. A., Grantfork.
Gauss, J. H. P., Chicago.
Goldstine, Mark T., Chicago.
Harris, C. E., Chicago.
Howard, G. H., Chicago.
Jackson, Harry, Chicago.
Johnston, F., Milton.
Knox, O. M., Chicago.
Lewis, D. D., Chicago.
Lewis, E. J., Chicago.
Martin, F. H., Libertyville.
Matter, C. M., Chicago.
Metcalf, W. B., Chicago.
Ostling, C. A., Chicago.
Russell, S. J., Chicago.
Silcox, J. E. D., Rio.
Swift, G. W., Chicago.

INDIANA

McKee, H. N., Covington.
Molloy, W. J., Muncie.

IOWA

Agan, G. M., Silver City.
Allband, G. A., Elliott.
Arent, Asaph, Humboldt.
Baker, L. J., Ottumwa.

Brothers, H. N., Sioux City.
Brown, J. W., Clearfield.
Campbell, H. E., Anita.
Carpenter, Frank, Reasnor.
Cretzmeyer, O. H., Algona.
Guilde, W. C., Bancroft.
Hibbs, F. V., Lohrville.
Hillweg, C. H., Corning.
Hoover, C. E., Hamburg.
Jones, C. R., Lewis.
Kahler, H. V., Reinbeck.
Keoper, Paul, Baxter.
Lane, J. P., Cascade.
Leson, C. T., Mt. Ayr.
Lyon, W. E., Gardner Grove.
Maulsby, E. P., Casey.
McCue, J. G., Silver City.
Moon, Roy, Clarinda.
Moore, R. A., Silver City.
Parriott, C. C., Essex.
Piper, H. J., Randolph.
Reed, G. P., Davis City.
Reed, M. B., Cromwell.
Scales, H. W., Yorktown.
Scott, J. R., Malvern.
Stanley, H. M., Prescott.

KANSAS

Lockwood, C. H., Towanda.
Montzingo, E. R., Rock.

KENTUCKY

Roberts, J. D., Stanley.
Williamson, H. F., Paducah.

LOUISIANA

Daniel, A. A., Pitkin.

MAINE

Gould, A. L., Freeport.

MARYLAND

Higdon, T. L., Wayside.
Shipley, A. M., Baltimore.
Stubenrauch, C. H., Baltimore.

MASSACHUSETTS

Baker, L. F., Fitchburg.
Bergin, S. A., Worcester.
Burbeck, E. K., Salem.
Donnell, H. A., Medford.
Field, M. T., Salem.
Gahan, P. F., Medford.
Liverpool, C. H., Somerville.
Marshall, W. R., Lynn.

MICHIGAN

Bell, G. A., Saginaw.
Bower, C. T., Ransom.
Burns, G. G., Fremont.
Howland, F. A., Adrian.
Kloppenstein, W. A., Manchester.
Loranger, Philip, Detroit.
Mack, C. W., Pontiac.
Morey, C. W., Pt. Huron.
Van Camp, E., Athens.
Watkins, J. T., Detroit.
Webber, E. E., Marlette.

MINNESOTA

Buser, J. R., Mesaba.
Johnson, Julius, Minneapolis.
Kalinoff, Demeter, Stillwater.
Warren, J. W., Faribault.
Wilcox, A. E., Minneapolis.
Smith, N. M., Minneapolis.

MISSOURI

Dod, F. L., Kansas City.
Graul, J. D., St. Louis.
Kearney, E. F., New Point.
Robinson, E. E., Adrian.
Scott, C. D., St. Louis.
Hanna, M. A., Kansas City.

NEBRASKA

Baldwin, F. J., Merriman.
Dunn, Mabel, Lincoln.
Egloff, G. E., Saronville.
Hedlund, A. E., Oakland.
Johnson, Alfred, Hebron.
Kimball, A. P., Creston.

NEW HAMPSHIRE

Mitchell, E. S., Concord.
Foss, G. H., Hinsdale.

NEW JERSEY

Flynn, J. J., Mount Holly.
Iszard, W. H., Camden.
La Motte, W. O., Riverside.
Lippincott, L. Y., Metuchen.
Lowrey, J. H., Newark.
Spalding, H. J., Union Hill.
Swayze, A. A., Hackensack.

NEW YORK

Adler, S. H., New York City.
Bartlett, E. A., Albany.
Bates, J. B., Gloversville.
Bauer, J. L., Brooklyn.
Buck, T. D., Rochester.
Bumsted, C. Van R., Lake Placid.
Burgess, H. C., Canandaigua.
Church, F. H., Utica.
Fowler, R. H., New York City.
Hall, J. S. K., New York City.
Hamlin, Cyrus, Brooklyn.
Hubbard, F. E., Keene Valley.
Jacobs, W. F., Buffalo.
Jankiewicz, L. P., Utica.
Leiter, J. G., Brooklyn.
Maynard, A. W., New York City.
Moroney, J., Oswego.
Pashayan, N. A., Schenectady.
Pray, S. B., New Rochelle.
Reed, J. E., Jr., Schenectady.
Stechmann, F. W., New York City.
van Riempst, T. S., New York City.
Singleton, B. J., Glens Falls.
Wright, H. J., Schoharie.

NORTH CAROLINA

Adams, C. E., Gastonia.
Alexander, Annie L., Charlotte.
Costner, T. F., Charlotte.
Cranmer, J. B., Wilmington.
Faison, W. W., Goldsboro.
Felts, R. L., Durham.
Hicks, C. S., Durham.
Hicks, W. N., Durham.
McGee, J. W., Jr., Raleigh.
Montgomery, H. M., Burlington.
Morse, L. B., Chimney Rock.
Moseley, C. W., Greensboro.
Robinson, Chas., Greensboro.
Rogers, J. R., Raleigh.
Williams, A. F., Wilson.
Woodley, C. B., Kinston.

NORTH DAKOTA

Williams, R. P., Gwinner.

OHIO

Cummins, G. M., Hamilton.
Davis, H. L., Cleveland.
George, J. C., Dayton.
Kelker, H. C., Cleveland.
Logan, G. M., Akron.
Pauli, W. O., Cincinnati.
Poling, J. B., Lima.

OKLAHOMA

Andrews, Leilia E., Oklahoma City.
Blackburn, J. H., Frisco.
Dever, H. A., El Reno.
Smith, J. H., Healdton.
Welch, W. T., Pike.

OREGON

Irvine, Lloyd, Portland.
Kiehle, F. A., Portland.
Parrish, Geo., Portland.
Smith, L. A., Roseburg.

PENNSYLVANIA

Bixler, L. C., Pittsburg.
Boughton, G. C., Erie.
Drozeski, E. H., Erie.
Eisaman, O. N., Pittsburg.
Ellis, W. T., Philadelphia.
Frishmuth, J. P., Philadelphia.
Grim, W. S., Beaver Falls.
Hearst, J. A., Philadelphia.
Hermance, W. O., Philadelphia.
Lauffer, C. A., Wilkinsburg.
Laurent, F. V., Pittsburg.
McKinnon, M. J., York.
Oberholtzer, M. B., Souderton.
Reidt, U. H., Jeannette.
Shimer, W. S., Philadelphia.
Sickler, P. C., Wilkes-Barre.
Sommerkamp, R. F., Philadelphia.
Stanton, J. N., Pittsburg.
Truckenmiller, Roy, Freeland.
West, C. W., Philadelphia.
Yoder, M. H., Lititz.

RHODE ISLAND

Hagennow, L. K., Hill Grove.
Turner, C. S., Providence.
White, C. F., Pontiac.

SOUTH CAROLINA

Maybank, Jos., Charleston.
Mood, G. McF., Charleston.
Speissegger, C. A., Jr., Charleston.
Watson, J. J., Columbia.

TENESSEE

Battle, W. B., Gallaway.
Donaldson, Sam, Dayton.
Forbes, E. C., Howell.
Johnson, T. L., Greenbrier.
McBride, J. W., Covington.
McCown, R. M., Knoxville.
Pride, W. T., Memphis.

TEXAS

Burk, W. E., Galveston.
Burns, E. J., Temple.
Eckhardt, J. C. A., Houston.
Gilbert, Jos., Austin.
Griffin, S. R., Canyon City.
Heaney, H. G., Corpus Christi.
Holland, B. P., Del Rio.
Holland, M. E., Houston.
Jones, R. L., Houston.
Lane, W. J., Marshall.
McGehee, J. L., Burkburnett.
Murphy, J. H., Powell.
Pearson, O. G., Seguin.
Pyburn, J. M., Coolidge.
Rawlinson, W. P., Sansom.
Sherrin, Jennie A., Galveston.
Talley, L. R., Temple.

UTAH

Gardner, W. L., Salt Lake City.
Lund, H. Z., Salt Lake City.

VIRGINIA

Archer, W. C., Blackstone.
Botts, W. N., Blackwood.
Buckner, Leigh, Roanoke.
Burks, J. C., Roanoke.
Carter, D. D., Woodstock.
Dew, H. W., Lynchburg.
Early, L. S., Petersburg.
Estill, A. D., Lexington.
Gill, S. J., Roanoke.
Ingram, Lawrence, Manchester.
Herbert, E. M., Roanoke.
Parkins, T. M., Staunton.
Peirce, C. T., Litwalton.
Vaughan, J. E., Lynchburg.
Wiley, G. S., Roanoke.

WASHINGTON

Brush, F. H., No. Yakima.
Ely, W. M., Walla Walla.
Fursey, F. R., Spokane.
Irwin, Lilian C., Seattle.
Keene, R. K., Spokane.
Wright, Louisa V., Camas.

WEST VIRGINIA

Bosworth, Perry, Huttonsville.
Fisher, Mark O., Parkersburg
Price, S. A., Weston.

WISCONSIN

Borchardt, A. C., New London.
Brehm, T. G., Racine.
Devine, C. B., Marshall.
Reeves, S. T., Tomah.

Deaths

Charles F. Warner, M.D. Jefferson Medical College, Philadelphia, 1854; formerly president of the Minnesota Valley Medical Association; a member of the International Association of Railway Surgeons; assistant surgeon of the One Hundred and Thirty-sixth and surgeon of the Forty-eighth New York Volunteer Infantry during the Civil War; alderman of Mankato, Minn., and president of the council; for twelve years city health officer, and for two terms physician of Blue Earth county; local surgeon for the Northwestern and St. Paul systems, died at his home in Mankato, July 24, from senile debility, aged 76.

Albert H. Marvin, M.D. Western Reserve University, Cleveland, 1891; University of Pennsylvania, Philadelphia, 1892; of Cleveland; a member of the American Medical Association, American Academy of Ophthalmology and Oto-laryngology and Cleveland Academy of Medicine; lecturer on rhinology in the Cleveland College of Physicians and Surgeons, and surgeon to the Throat and Ear Dispensary of the Cleveland General Hospital; died at Chautauqua, N. Y., July 29, from nephritis, aged 42.

Robert J. Christie, M.D. University of Pennsylvania, Philadelphia, 1856; a member of the Illinois State Medical Society; formerly dean and professor of medicine in the Chaddock School of Medicine, Quincy, Ill.; local surgeon of the Hannibal and St. Joseph and St. Louis, Keokuk and Northwestern railways; consulting surgeon of the Blessing Hospital, Quincy; one of the best-known practitioners of western Illinois, died at his home in Quincy, July 27, from cholelithiasis, aged 78.

Victor J. Baccus, M.D. Northwestern University Medical School, Chicago, 1898; a member of the American Medical Association; professor of gynecology in Reliance Medical College, Chicago; formerly professor of surgery and head of the surgical department of the American College of Medicine and Surgery; surgeon to Frances Willard Hospital; died at the Policlinic Hospital, Chicago, August 10, after a long illness, aged 38.

George D. Dowkontt, M.D. Jefferson Medical College, Philadelphia, 1881; formerly editor and publisher of the *Double Cross* and *Medical Missionary Record*, and medical director of the International Medical Missionary Society; who is said to have established the first free dispensary in New York City; died at the home of his son in Brooklyn, July 31, from chronic bronchitis, aged 66.

Robert Masters Wilson, M.D. Long Island College Hospital, Brooklyn, N. Y., 1873; of Lincoln, Ill.; a veteran of the Civil War; president of the Brainerd District Medical Society in 1897; a member of the Illinois State Medical Society and surgeon to St. Clara's Hospital, Lincoln; died in that institution July 27, from cholelithiasis, aged 52.

Frank R. Hansen, M.D. Hospital College of Medicine, Louisville, 1898; formerly local surgeon to the Chicago, St. Paul, Minneapolis and Omaha Railway at Heron Lake, Minn.; secretary of the board of education of Lakefield, Minn.; is reported to have died in the Jackson county jail, Lakefield, July 29, aged 37.

Augustus Lewis, M.D. University of Tennessee, Nashville, 1879; a member of the Kentucky State Medical Association; for many years a U. S. pension examining surgeon at Central City, Ky.; a veteran of the Civil War; died at his home in Greenville, July 27, from lung disease, aged 70.

Ralph B. Hanahan, M.D. Medical College of South Carolina, Charleston, 1886; of Winnsboro, S. C.; a member of the Amer-

ican Medical Association; for whose services during the Charleston earthquake, a medal was awarded by the city of Charleston; died at his home, July 30, from heart disease, aged 48.

Markwell Seward Curdy, M.D. Chicago Homeopathic Medical College, 1884; in 1893 and 1902, health officer of Corning, N. Y.; formerly attending physician to Corning Hospital and for many years proprietor of the Highland Pines Sanitarium, died at his home in Ithaca, N. Y., July 25, from paralysis, aged 50.

Thaddeus Donahue, M.D. Kentucky School of Medicine, Louisville, 1867; a member of the Tennessee State Medical Association; major and surgeon during the Civil War; for several years a member of the local board of U. S. pension examining surgeons; died at his home in Memphis, July 25, aged 74.

Henry Gordon Forbes, M.D. New York University, New York City, 1866; a contract surgeon in the Army during the Civil War; for three terms a member of the board of aldermen of Chicopee Falls, Mass.; died at his home in that city, July 30, from cirrhosis of the liver, aged 69.

Harvey Monroe Young, M.D. University of Alabama, Mobile, 1893; a member of the Medical Association of the State of Alabama; formerly health officer of Dothan, Ala., and physician to Houston county; died suddenly at his home in Dothan, July 27, from dengue fever.

Charles S. Morton, M.D. University of Virginia, Charlottesville, 1854; for many years a practitioner of Pamplin City, Va.; surgeon of the Tenth Georgia Infantry, C. S. A., during the Civil War; was killed by a railway train, near Lynchburg, Va., July 28, aged 77.

Percy Stansbury, M.D. Baltimore University, 1894; formerly of Baltimore; a surgeon in the volunteer service during the Spanish-American War, with service in Cuba; died suddenly at his home at Wingate's Point, Md., July 26, from heart disease, aged 42.

J. L. Johnston, M.D. Physio-Medical College of Indiana, Indianapolis, 1898; of Los Angeles, Cal.; died in the Mine Operators' Hospital at Searchlight, Nev., July 23, from the effects of a fall into the shaft of the Duplex Extension mine, aged 65.

Albert M. Curry, M.D. University of Pennsylvania, Philadelphia, 1875; of Brooklyn, N. Y.; a member of the Medical Society of the State of New York; died suddenly on the beach at Atlantic City, N. J., July 26, from heart disease, aged 59.

George C. Burton, M.D. Louisville, (Ky.) Medical College, 1881, Washington, D. C.; a member of the Medical Association of the District of Columbia; died at his old home in Mitchell, Ind., July 22, from cerebral hemorrhage, aged 52.

Wilbert G. McIntyre, M.D. Trinity Medical College, Toronto, 1901; M. C. P. and S., Ont., 1892; member of parliament for Strathcona, Alberta; died in the Strathcona Hospital, July 21, after an operation for disease of the kidney.

Grant Cullimore, M.D. Rush Medical College, Chicago, 1885; an oculist and aurist; at one time secretary of the Oklahoma Territorial Board of Health; died at his home in Oklahoma City, July 29, from typhoid fever, aged 47.

Yewell Dalton Scales, M.D. (license, Ill., 1878); of Springfield, Ill., assistant surgeon in a Tennessee regiment, C. S. A., during the Civil War; died in St. John's Hospital, Springfield, July 21, from cerebral hemorrhage, aged 65.

Archibald G. Kinkhead (license, Ill., years of practice, 1878); a member of the Illinois State Medical Society; a surgeon at Camp Yates, Springfield, Ill., during the Civil War; died at his home in Greenfield, Ill., July 23, aged 76.

Oliver H. Buford, M.D. Medical College of Georgia, Augusta, 1889; formerly an acting assistant surgeon, U. S. Army; a member of the Medical Association of Georgia; died at his home in Cartersville, July 30, aged 51.

George Heywood, M.D. Harvard Medical School, Boston, 1887; a member of the Medical Society of the State of New York; died suddenly at his home in New York City, July 30, from cerebral hemorrhage, aged 47.

Samuel Robert Dunlop, M.D. College of Physicians and Surgeons, New York City, 1890; of Trenton, N. J.; died in the Hudson Street Hospital, New York City, January 29, from morphin poisoning, aged 42.

Henry Hull, M.D. University of Michigan, Ann Arbor, 1872; a veteran of the Civil War; for eleven years postmaster of Ravenna, Mich.; died at his home, July 28, from cerebral hemorrhage, aged 62.

James A. Diddle (license, W. Va., years of practice), formerly of Winifrede, W. Va.; physician for the Coke-Coal company near Meadowbrook, W. Va., died recently at East Bank, W. Va., aged 66.

Julius Nelson Fraser, M.D. Laval University, Montreal, 1874; of Kankakee, Ill.; died at the West Side Hospital, Chicago, July 27, from tuberculosis, after a surgical operation, aged 67.

Joseph H. Price, M.D. Jefferson Medical College, Philadelphia, 1877; a member of the Medical Society of the State of Pennsylvania; died at his home in DeHaven, July 27, aged 56.

George Paul Guilford, M.D. St. Louis (Mo.) Medical College, 1870; a veteran of the Civil War; died at his home in Owosso township, Mich., July 25, from cerebral hemorrhage, aged 68.

John W. Miller, M.D. American Medical College (Eclectic), St. Louis, 1897; (license, Ill., years of practice, 1888); of Madison, Ill.; died in Edwardsville, Ill., recently, aged 71.

George W. Briggs, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1876; formerly of Chapin, Ill.; died at his home near St. James, Mo., July 25, from nephritis.

Edwin C. Hunt, M.D. Tulane University, New Orleans, 1891; a member of the Mississippi State Medical Association; died at his home in Vicksburg, July 24, aged 42.

Will L. Chester, M.D. University of Louisville (Ky.), 1879; of Jackson, Tenn.; died in a hospital in Memphis, Tenn., July 26, from disease of the stomach, aged 50.

Charles Dustin Hunking, M.D. Harvard Medical School, Boston, 1877; of Haverhill, Mass.; died at his summer home at Hampton Beach, N. H., July 23, aged 59.

Robert C. Carter, M.D. Missouri Medical College, St. Louis, 1868; a member of the Missouri State Medical Association; died at his home in Higginsville, July 5.

Andrew Jackson Swaney, M.D. New York University, New York City, 1851; died at his home in Gallatin, Tenn., July 20, from heart disease, aged 77.

Samuel E. Dyke, M.D. Louisville (Ky.) Medical College, 1875; died at his home in Spring Valley, Ohio, July 27, from heart disease, aged 62.

Melvin H. Fitts, M.D. Eclectic Medical Institute, Cincinnati, 1873; died at his home in Martin, Tenn., July 21, from cerebral hemorrhage, aged 67.

William Conner, M.D. Jefferson Medical College, Philadelphia, 1892; died at his home in Philadelphia, July 19, from paralysis, aged 59.

John M. Griffin, M.D. Tulane University, New Orleans; died at his home in Hillsboro, Tex., February 13, from nephritis, aged 77.

John McArthur Dunsmore, M.D. McGill University, Montreal, 1870; died recently at his home in Stratford, Ont., aged 77.

Marriages

IRA C. BOWMAN, M.D., to Miss Helen H. Ogden, both of Philadelphia, July 29.

GALEN K. HASSENPLUG, M.D., to Miss Helen A. Sarconi, both of Denver, July 26.

IRA G. GASSER, M.D., to Miss Lillian H. Ryan, both of Philadelphia, July 29.

HELEN MCNICHOL, M.D., and Edward A. English, both of Philadelphia, July 26.

WALTER F. ROCHELLE, M.D., Jackson, Tenn., to Miss Kathleen McCorry, June 30.

CARL LUDWIG LARSON, M.D., to Miss Mary Alice Prosser, both of Butte, Mont., July 19.

RALPH S. CHAMBERLAIN, M.D., Denver, to Miss Mollie J. Dorsey, at York, Pa., July 27.

GEORGE E. PARSONS, M.D., Elk River, Minn., to Miss Jessie Helen Horn, of St. Paul, July 26.

FRANCIS SCHILL, JR., M.D., to Miss Olive Virginia Shaffer, both of Johnstown, Pa., June 30.

DONALD ROSS MCINTYRE, M.D., Gwinn, Mich., to Miss Carolyn Merritt King of Milwaukee, August 3.

JOHN WILSON MACCONNELL, M.D., Davidson, N. C., to Miss Agnes H. Doyle, at Baltimore, July 28.

THOMAS VICTOR BATCHELOR, M.D., Bovina, Miss., to Miss Maria Louise Young of Vicksburg, Miss., July 20.

EVAHN RUSSELL WALKER, M.D., Marshalltown, Iowa, to Miss Mae Bower, at West Union, Iowa, recently.

D. ASHLEY TURNER, M.D., Goldfield, Nev., to Miss Charlotte Schultz, of Walla Walla, Wash., at Los Angeles, Cal., July 19.

Medical Education and State Boards of Registration

Reciprocity with Vermont

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, states that Vermont now has reciprocal relations with District of Columbia, Illinois, Indiana, Maine, Maryland, Michigan, New Hampshire, New Jersey, New York, North Dakota, Ohio, Texas, Wisconsin and Wyoming.

Present Status of State Board Requirements

Elsewhere in this issue it will be noted that 50 medical colleges have adopted requirements of preliminary education beyond a four-year high-school education. It will be particularly interesting, therefore, to note advances in requirements made recently by state medical examining boards. Some of these requirements are graphically presented by the accompanying charts and the essential features of the various practice acts are shown in Table A.

Table B shows what states have established reciprocal relations with other states.

TABLE A

Essential Features of State Laws and Conditions Surrounding Medical Licensure

STATE.	Examinations only—Graduation not essential	Diploma and Examination.	Preliminary Education. Law Provides For.	Preliminary Education. All Credentials Inspected by Boards.*	Preliminary Education. Years in High School Required.	Preliminary Education. Years in a College of Arts.	Medical Education. Advanced Standing for A.B., B.S.	Medical Education. Required Years of Medical Study.	Medical Education. Minimum Hours per Week.	Medical Education. Minimum Weeks per Year.	Medical Education. Required Months per Year.	Medical Education. Minimum Total Hours of Course.	Has Reciprocity with Other States.	Examining Boards Separate.	Exam. Board Nomt'd or App'd by State Med. Soc	Examination Fee.	Certificate and Recording Fee.
Alabama	....	Yes	....	....	....	....	....	....	....	....	....	....	Yes	....	Yes	$10	$1.00
Arizona	....	Yes	....	....	....	....	....	....	....	....	....	....	No	....	....	10	2.00
Arkansas	....	Yes	Yes	....	3	....	....	....	....	....	....	....	Yes	Yes	Yes	15	None
California	....	Yes	Yes	....	4	....	....	4	30	30	7½	3600	No	....	Yes	25	None
Colorado	....	Yes	Yes	....	4	1	....	4	....	....	9	3600	Yes	....	....	25	None
Connecticut	....	Yes	Yes	....	4	1	....	4	36	26	6½	3744	Yes	Yes	Yes	15	2.00
Delaware	....	Yes	Yes	....	4	....	....	4	....	....	7	....	Yes	Yes	Yes	10	None
Dist. of Col.	....	Yes	....	....	....	....	....	4	....	....	....	....	Yes	Yes	....	10	.50
Florida	....	Yes	....	....	....	....	....	....	....	....	....	....	No	Yes	Yes	15	None
Georgia	....	Yes	....	....	....	....	....	3	....	....	6	....	Yes	Yes	....	10	.50
Hawaii	....	Yes	....	....	....	....	....	4	....	....	....	....	No	....	....	10	None
Idaho	....	Yes	Yes	....	....	....	....	....	....	....	....	....	No	....	....	25	None
Illinois	....	Yes	Yes	....	4	....	....	4	....	30	7½	3200	Yes	....	....	10	5.00
Indiana	....	Yes	Yes	Yes	4	....	....	4	36	30	7½	4320	Yes	....	....	25	.50
Iowa	....	Yes	Yes	....	4	....	No	4	....	26	7	4180	Yes	....	....	10	.50
Kansas	....	Yes	Yes	....	4	....	....	4	....	....	6	....	Yes	....	....	15	3.00
Kentucky	....	Yes	Yes	Yes	4	....	No	4	....	30	7½	....	Yes	....	....	10	.50
Louisiana	....	Yes	....	....	....	....	....	4	....	....	....	....	Yes	Yes	Yes	10	2.00
Maine	....	Yes	Yes	....	4	....	....	4	....	....	....	....	Yes	....	....	10	2.00
Maryland	....	Yes	Yes	....	....	....	....	4	....	....	....	....	Yes	Yes	Yes	20	None
Massachusetts	Yes	....	....	....	....	....	....	....	....	....	....	....	No	....	....	20	None
Michigan	....	Yes	Yes	Yes	4	....	No	4	36	34½	8½	3600	Yes	....	Yes	25	None
Minnesota	....	Yes	Yes	....	4	2	No	4	....	26	6½	....	Yes	....	....	10	None
Mississippi	Yes	....	....	....	....	....	....	....	....	....	....	....	No	....	....	10	.25
Missouri	....	Yes	Yes	....	4	....	....	4	....	....	7	....	Yes	....	....	15	1.00
Montana	....	Yes	Yes	....	....	....	....	4	....	....	6	....	No	....	....	25	None
Nebraska	....	Yes	Yes	....	4	....	....	4	....	....	6	....	Yes	....	....	25	None
Nevada	....	Yes	Yes	....	4	....	....	4	....	....	....	....	Yes	....	....	25	None
New Hamp.	....	Yes	Yes	....	4	....	....	4	....	....	9	....	Yes	Yes	Yes	10	None
New Jersey	....	Yes	Yes	....	4	....	....	4	....	....	7	....	Yes	....	....	25	2.00
New Mexico	....	†	Yes	....	4	....	....	4	30	30	7½	3600	Yes	....	....	25	None
New York	....	Yes	Yes	Yes	4	....	No	4	....	....	7	....	Yes	....	Yes	25	1.00
No. Carolina	....	Yes	Yes	....	....	....	....	3	....	....	....	....	Yes	....	Yes	10	.25
No. Dakota	....	Yes	Yes	....	4	2	....	4	30	30	8	3600	Yes	....	....	20	None
Ohio	....	Yes	Yes	Yes	4	....	....	4	....	30	....	....	Yes	....	....	25	.50
Oklahoma	....	Yes	Yes	....	2	....	....	4	....	....	....	....	Yes	....	....	15	None
Oregon	....	Yes	....	....	....	....	....	....	....	....	....	....	No	....	....	10	None
Pennsylvania	....	Yes	Yes	....	4	....	....	4	....	....	....	....	Yes	Yes	Yes	25	1.00
Philippine Is.	....	Yes	Yes	....	....	....	....	....	....	....	....	....	No	....	....	15	None
Porto Rico	....	Yes	....	....	....	....	....	....	....	....	....	....	Yes	....	....	10	5.00
Rhode Island	....	Yes	Yes	....	4	....	....	....	....	....	....	....	No	....	....	10	2.50
So. Carolina	....	Yes	Yes	....	....	....	....	4	....	26	6½	....	Yes	....	Yes	10	.25
So. Dakota	....	Yes	Yes	....	....	1	....	4	....	26	6½	....	No	....	....	20	None
Tennessee	Yes	....	....	....	....	....	....	....	....	....	....	....	Yes	....	....	10	5.50
Texas	....	Yes	Yes	....	3	....	....	4	....	....	....	600	Yes	....	Yes	15	1.00
Utah	....	Yes	Yes	....	4	....	....	4	....	....	....	....	Yes	....	....	15	None
Vermont	....	Yes	Yes	....	4	....	....	4	....	....	....	3600	Yes	....	Yes	20	.25
Virginia	....	Yes	....	....	....	....	....	....	....	....	....	....	Yes	....	Yes	10	None
Washington	....	Yes	....	....	....	....	....	3	....	....	....	....	No	....	....	25	1.00
West Virginia	....	Yes	Yes	....	4	....	....	....	....	....	....	....	Yes	....	....	10	None
Wisconsin	....	Yes	Yes	Yes	4	....	....	4	....	....	7	....	Yes	....	Yes	20	.50
Wyoming	....	Yes	....	....	....	....	....	....	....	....	....	....	Yes	....	....	25	None

* Previous to or at the time of matriculation.
† Will accept a diploma without examination if from a recognized college.

PRELIMINARY EDUCATION

Chart I shows the provision made by the various states in regard to the preliminary education of applicants. Six states have adopted preliminary requirements equal to one or two years of work in a college of liberal arts in addition to a four-year high school education, thereby supporting the better class colleges with similar requirements. These are:

State Examining Board of	No. of Years Required	Affects Students matriculating	Affects all Applicants after
North Dakota	2	1907-08	1911
South Dakota	1	1907-08	1911
Minnesota	2	1908-09	1912
Colorado	1	1908-09	1912
Connecticut	1	1910-11	1914
Kansas	1	1910-11	1914

There are twenty-two states having preliminary requirements stated as a four-year high school education or its "equivalent," which is intended to mean a four-year high school course which has been preceded by eight years in the elementary grades. These states are:

California	Missouri	Ohio
Delaware	Nebraska	Pennsylvania
Illinois	Nevada	Texas
Indiana	New Hampshire	Utah
Iowa	New Jersey	Vermont
Kentucky	New Mexico	West Virginia
Maine	New York	Wisconsin
Michigan		

In five states preliminary standards are provided for but which are less than a four-year high school education, these states being:

Arkansas	South Carolina
Maryland	Texas
Oklahoma	

In three states, Idaho, Montana and North Carolina, no standards have been fixed, although the boards have authority to establish the standard. In North Carolina an amendment to make the preliminary requirement a four-year high school education was recently defeated by a plea "for the poor boy who wants to study medicine."

There still remain thirteen states having no provision in the law for preliminary education. These states are:

Alabama	Mississippi
Arizona	Oregon
District of Columbia	Tennessee
Florida	Virginia
Georgia	Washington
Louisiana	Wyoming
Massachusetts	

In the fourth column of Table A it will be noted that in six states the examining boards pass on all the entrance credentials of medical students previous to, or at the time of matriculation, and conduct all entrance examinations. These states are:

Indiana	New York
Kentucky	Ohio
Michigan	Wisconsin

The weakest point in the American system of medical education still remains the low requirements of preliminary education and, speaking generally, no requirement is so poorly enforced by our examining boards, chiefly because of the difficulty of giving fair value to the credentials from our endless variety of secondary schools. Investigation reveals that the "equivalent" of a four-year high school education in several states may mean almost anything from the fair equivalent down to a 20-week course in a night school or less.

Five years ago fourteen states were allowing non-graduates to take examinations and secure licenses to practice medicine. Now all states require that candidates must be graduates of medical schools except three, these, as shown in Chart 2, being Massachusetts, Mississippi and Tennessee.

RECOGNITION OF MEDICAL COLLEGES

Chart 3 shows what state boards have been given authority to withhold recognition from low grade medical colleges. Some laws give authority but at the same time provide educational standards so low as to make the authority ineffective. Others merely provide that the college must be "legally chartered" which is of little effect since even a number of notorious diploma mills were "legally chartered." There are twenty-seven states, however, which have apparently given their boards unhampered authority to refuse recognition to medical schools not doing satisfactory work. These states are:

Colorado	Maine	North Dakota
Connecticut	Michigan	Ohio
Delaware	Minnesota	Rhode Island
Idaho	Missouri	South Carolina
Illinois	Montana	South Dakota
Iowa	Nebraska	Texas
Indiana	New Hampshire	Vermont
Kansas	New Mexico	West Virginia
Kentucky	New York	Wisconsin

Fourteen states are given authority which for various reasons is more or less limited. These states are:

Arizona	Louisiana	Oregon
Arkansas	Nevada	Utah
California	New Mexico	Washington
District of Columbia	North Carolina	Wyoming
Georgia	Oklahoma	

There still remain eight states where the examining boards are not given legal authority to protect the people of their states from graduates of diploma mills or low grade medical colleges. These states are:

Alabama	Massachusetts	Tennessee
Florida	Mississippi	Virginia
Maryland	Pennsylvania	

RECIPROCITY

Chart 4 shows that only thirteen states remain which have not entered into reciprocal relations with others. These states are:

Alabama	Idaho	Oregon
Arizona	Massachusetts	South Dakota
Connecticut	Mississippi	Rhode Island
California	Montana	Washington
Florida		

Alabama and South Dakota have legislation providing for reciprocity but as yet no reciprocal relations with other states have been reported.

Table B shows which states have reciprocal relations and the basis on which such reciprocity has been established. During 1908, 1,092 licenses were granted through reciprocity as compared with 989 in 1907 and 685 in 1906. The figure "1" indicates that reciprocity is on the basis only of a written examination while the figure "2" indicates that reciprocity is on the basis of either a written examination or of a diploma without examination. If the applicant was originally registered without examination prior to the date when the state in which he desires re-registration began requiring examination of all applicants, he is eligible in states with the figure 2. The dates in the second column show when the states began requiring examinations of all applicants.

MULTIPLE BOARDS

The number of states having more than one board of medical examiners has been gradually reduced until now only

TABLE B.—RECIPROCITY.

The Examining Board of	Required examination of all applicants since	Reciprocates with, or recognizes certificates granted by: Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Col.	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Mass.	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hamp.	New Jersey	New Mexico	New York	No. Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	So. Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming
Alabama	1903	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Arizona	1897	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Arkansas	1903	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
California	1901	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colorado	1906	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	1	1	..	..	1	1	..	1	..	1	1	..	1	..	..	..	..	1	..	..	..	..	..	..	1	1	1	..	..	..	1	..
Connecticut	1897	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Delaware	1895	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
District of Columbia	1896	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	1	1	..	..	..	..	2	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	..	1	1	..	2	2	..
Florida	1889	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	1895	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	2	..	..	2	..	2	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	2	..
Idaho	1899	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Illinois	1899	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	1	1	..	1	1	..	..	..	..	1	1	..	1	..	..	1	1	1	..	..	..	..	1	..	1	1	1	..	..	1	1	1
Indiana	1901	..	..	..	..	1	..	..	1	..	1	..	1	..	2	..	..	..	2	2	..	2	2	..	..	..	..	2	2	1	..	..	..	..	2	..	2	..	..	..	..	2	1	2	2	..	..	2	2	1
Iowa	1899	..	..	..	..	1	..	..	..	..	2	..	1	..	2	..	..	..	2	2	..	2	2	..	..	..	..	2	2	1	..	1	..	..	1	..	..	..	..	..	..	2	1	2	..	..	1	..	2	1
Kansas	1902	..	..	..	..	1	..	..	..	..	..	..	1	..	2	2	..	..	2	2	..	2	2	..	..	..	..	2	2	..	..	..	..	..	1	..	..	..	..	..	..	2	1	2	..	..	..	..	2	..
Kentucky	1907	..	..	..	..	1	..	..	1	..	..	..	..	2	2	..	2	..	2	2	..	2	2	..	..	..	..	2	2	1	1	1	..	..	1	..	..	..	..	..	..	2	1	2	..	1	..	..	2	..
Louisiana	1894	..	..	..	..	1	..	1	1	..	..	..	1	1	1	1	1	1	..	1	..	1	1	..	..	..	..	1	1	1	1	1	1	..	1	1	..	..	..	..	..	1	..	1	1	1	..	..	1	..
Maine	1901	..	..	..	..	1	..	1	1	..	..	..	1	2	2	2	2	2	1	2	..	2	2	..	..	..	..	2	2	..	1	..	..	..	1	2	2	..	..	..	..	2	1	2	2	..	..	2	2	1
Maryland	1892	..	..	..	..	..	..	1	1	..	..	..	1	2	2	2	2	2	2	2	..	2	2	..	..	..	..	2	2	..	2	1	..	..	..	..	..	..	..	..	..	2	1	2	2	1	..	2	2	..
Massachusetts	1895	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Michigan	1899	..	..	..	..	1	..	..	1	..	2	..	1	2	2	2	2	2	1	2	..	2	2	..	..	..	..	2	2	..	2	..	1	..	1	2	2	..	..	..	..	2	1	2	2	..	1	2	2	1
Minnesota	1887	..	..	..	..	1	..	..	1	..	..	..	1	2	2	2	2	2	1	2	..	2	2	..	..	..	..	2	2	1	1	2	..	..	1	2	2	..	..	..	..	2	1	2	2	..	1	2	2	1
Mississippi	1882	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Missouri	1901	..	..	..	..	1	..	..	..	..	..	..	..	2	2	..	2	..	1	..	..	2	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	1
Montana	1889	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nebraska	1903	..	..	..	..	1	..	..	2	..	2	..	1	2	2	2	2	2	1	2	..	2	2	..	..	..	..	2	2	..	2	1	..	..	..	2	1	..	..	..	..	2	1	2	..	1	..	2	2	1
Nevada	1907	..	..	..	..	1	..	..	..	..	2	..	1	2	2	..	2	1	2	2	..	2	2	..	..	..	..	1	1	..	2	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	2	2	..
New Hampshire	1897	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..
New Jersey	1890	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	..	1	1	..	..
New Mexico	1907	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
New York	1890	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
North Carolina	1885	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North Dakota	1890	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	1
Ohio	1904	..	..	..	..	1	..	..	2	..	..	..	1	2	2	..	..	..	2	2	..	2	2	..	..	..	..	2	2	..	..	..	1	..	1	..	..	..	..	..	..	..	..	1	..	2	..	..	2	2	..
Oklahoma	1903	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Oregon	1895	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pennsylvania	1894	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..
Rhode Island	1902	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Carolina	1904	..	..	..	..	..	..	..	..	..	..	..	1	..	2	2	2	..	2	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	..	2	2	1
South Dakota	1903	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tennessee	1901	..	..	..	..	1	..	..	..	..	..	..	1	2	..	..	2	..	..	..	..	2	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..
Texas	1901	..	..	..	..	1	..	..	1	..	..	..	1	1	1	..	1	..	1	1	..	1	1	..	1	..	1	1	..	1	1	..	1	..	..	1	1	..	..	..	..	..	..	..	1	1	..	1	1	..
Utah	1898	..	..	..	..	1	..	..	..	..	..	..	1	2	2	..	2	..	..	..	..	2	2	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	2	2	..
Vermont	1904	..	..	..	..	..	..	1	..	..	..	..	1	2	2	..	..	2	..	2	..	2	2	..	..	..	..	..	..	..	2	1	..	1	..	1	2	..	..	..	..	..	1	..	..	1	..	..	2	1
Virginia	1885	..	..	..	..	..	..	1	1	..	2	..	..	2	1	..	1	1	..	1	..	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	2	2	..
Washington	1890	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
West Virginia	1895	..	..	..	..	..	..	..	2	..	2	..	1	2	2	2	2	2	..	2	..	2	2	..	..	..	2	..	2	2	2	1	..	..	1	2	..	..	..	..	..	2	2	..	1	..	2	..	2	1
Wisconsin	1901	..	..	..	..	1	..	..	2	..	2	..	1	2	2	2	2	1	2	2	..	2	2	..	..	..	2	2	2	2	1	..	..	..	1	2	..	..	..	..	..	2	2	2	1	2	2	2	..	..
Wyoming	1901	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	1	..	1	1	..	..	..	1	1	..	1	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	1	..	..	1	..	..

Key: 1, Reciprocates on the basis of an examination only. 2, Reciprocates on the basis either of a diploma or of an examination.

NOTE A.—Reference should also be made in the preceding pages to the paragraph concerning reciprocity in the law of each state.

ten remain. These states and the number of boards in each are as follows:

Arkansas, 3.	Florida, 3.	Maryland, 2.
Connecticut, 3.	Georgia, 3.	New Hampshire, 3.
Delaware, 2.	Louisiana, 2.	Pennsylvania, 3.
District of Columbia, 3.		

The division of the responsibility for the safeguarding of public interests always leads to confusion and adds to the difficulty of upholding any fair standard of licensure.

OSTEOPATHY

Every new school of medicine which tries to secure the right to practice medicine invariably holds standards of preliminary and medical education lower than those already in the field. That is the chief argument against them. So the new sect, osteopathy, which, under the pretext that its followers were "not practicing medicine," has secured favorable legislation in a considerable number of states (Chart 6), upholds practically no standards for admission and gives at most only a three-year course in medicine. The legal status is discussed more in detail below:

ONE STANDARD NECESSARY

One thing should be clearly borne in mind in all discussions of medical sects, namely: Regardless of the methods or limitations of treatment employed, practitioners are alike in that they must make diagnoses—must differentiate between health and disease. To treat a disease without knowing what it is, is merely guesswork, is unscientific, is a dangerous procedure and is an imposition on the patient. For these reasons there should be one standard set for all practitioners of medicine regardless of the methods of treatment, and this standard should be sufficiently high to guarantee that the practitioner is able to properly diagnose diseases. If he can comply with that standard he should be granted a license and allowed to practice by whatever method he chooses. If he can not comply with that standard he is a menace to the lives of any who would be unfortunate enough to be his patients, and for that reason should not be allowed to practice.

Present Legal Status of Osteopathy

Closely allied to the regulation of the practice of medicine is the problem of the regulation of the various sects and fads which are constantly arising. The most conspicuous one just at present is the so-called "school of osteopathy," the peculiar teachings of which are too well known to require discussion. With the scientific fallacies of this cult we are not at present concerned, but simply with the present legal status of the followers of this school in the various states.

Examination of the existing laws shows an interestingly contradictory and peculiarly characteristic condition. In some states, the practice of osteopathy has been legally decided to be the practice of medicine, while in other states it has been decided by equally weighty and learned authorities that it is not the practice of medicine. Naturally, in most of those states in which a separate board of osteopathic examiners has been created, the courts have held that osteopathy was something separate and distinct from the practice of medicine, while in those states in which osteopaths have been added to the existing boards, the courts have held that osteopathy was simply one form of the practice of medicine.

In seventeen states, the existing laws authorize a separate board, to examine and license practitioners of osteopathy. These states, with the year of the adoption of the law, are as follows: Arkansas, 1903; Connecticut, 1901; Florida, 1909; Idaho, 1907; Louisiana, 1908; Michigan, 1903; Minnesota, 1903; Missouri, 1907; Montana, 1905; Nebraska, 1909; New Mexico, 1905; North Carolina, 1907; North Dakota, 1909; Pennsylvania, 1909; South Dakota, 1907; Tennessee, 1905; Vermont, 1904.

In eleven states, the law authorizes the appointment of an osteopath on the state board. These states, with the date of the passage of the law, are: California, 1907; Indiana, 1905; Iowa, 1902; Kentucky, 1904; New York, 1907; Oklahoma, 1907; Oregon, 1907; Texas, 1907; Utah, 1907; Washington,

CHART 1.—STATE BOARD REQUIREMENTS OF PRELIMINARY EDUCATION

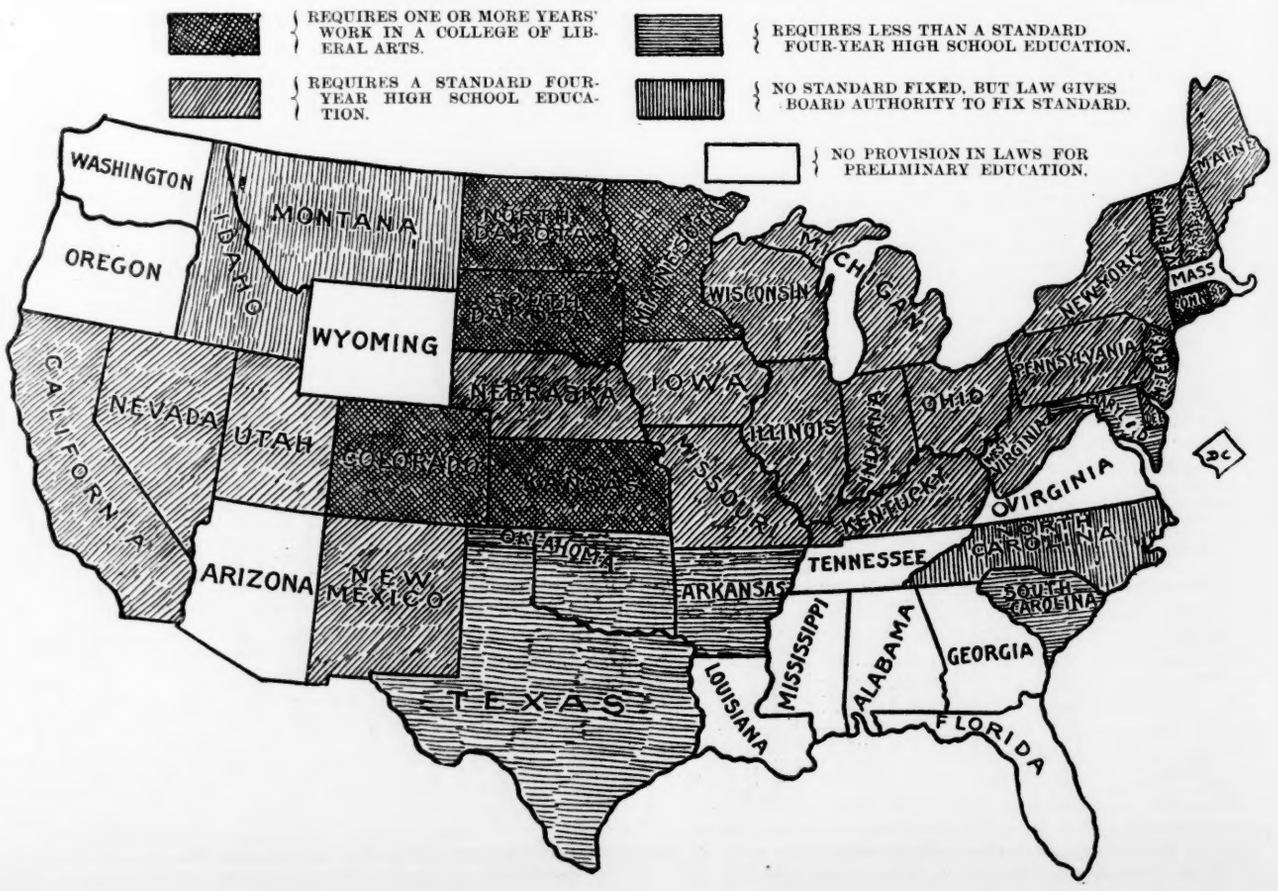


CHART 2.—STATES REQUIRING GRADUATION FROM A MEDICAL COLLEGE

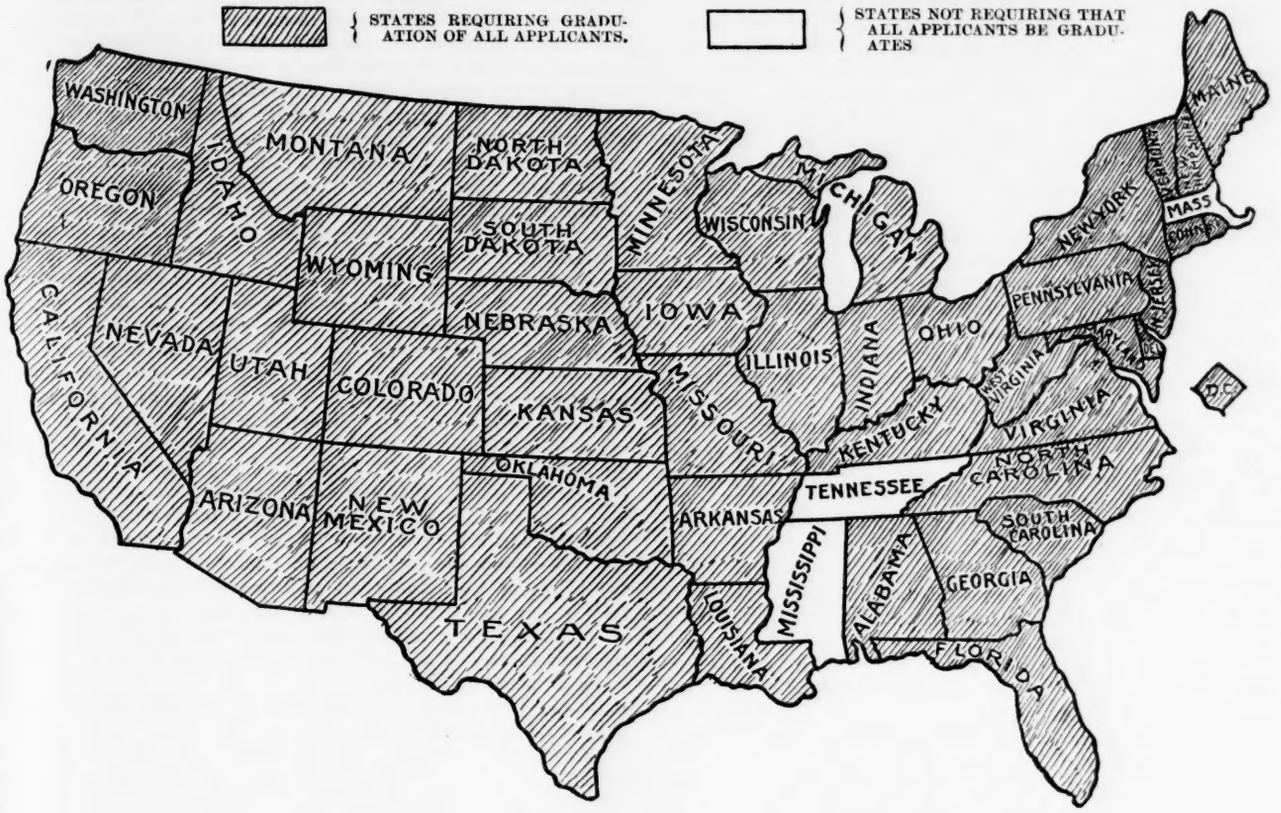
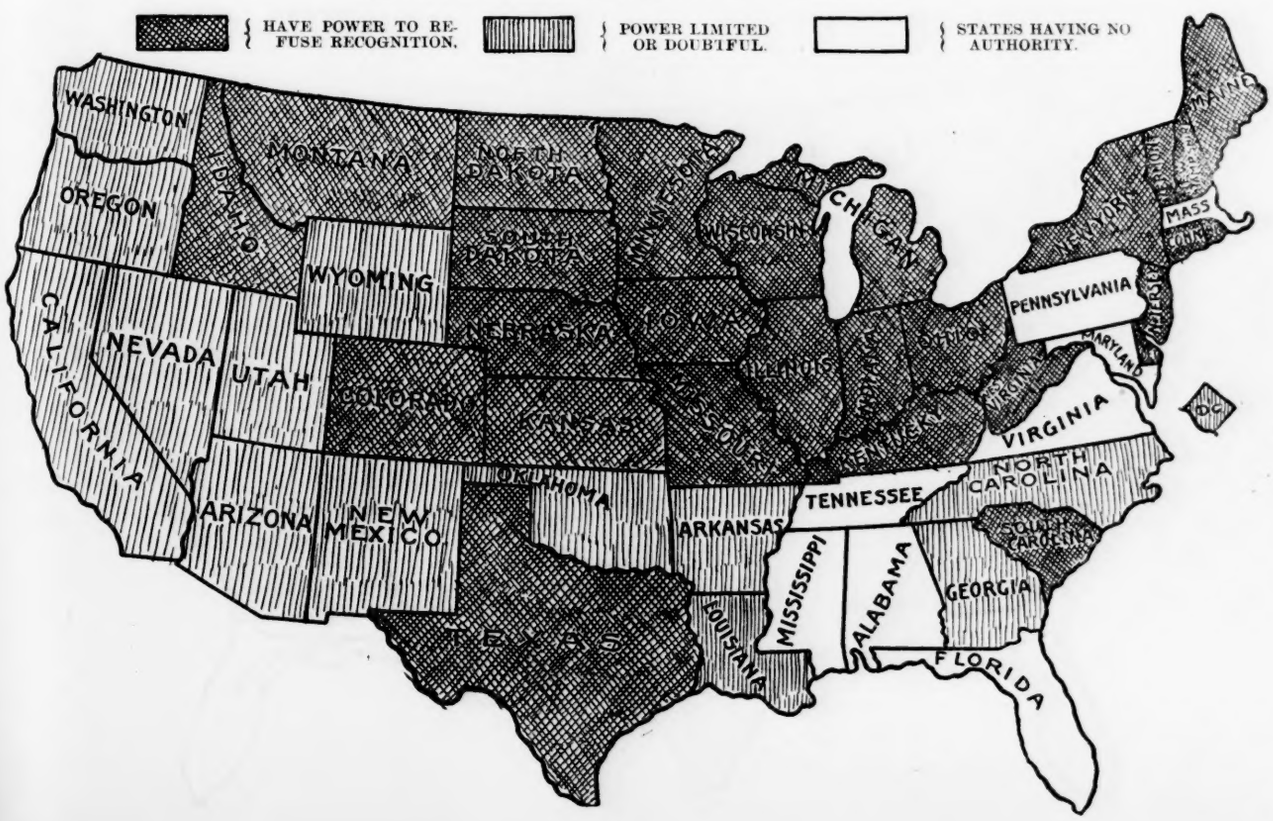


CHART 3.—STATE BOARDS HAVING AUTHORITY TO REFUSE RECOGNITION TO LOW GRADE MEDICAL COLLEGES



1909; Wisconsin, 1903. In Iowa, while authorized, the governor has not yet appointed an osteopathic member.

In two states, Colorado and Maryland, osteopaths are exempt from the operation of the medical practice act. In nine states, the examining board is authorized to examine and register them as osteopaths. These states are: Delaware, 1907; Kansas, 1901; Massachusetts, 1909; Nebraska, 1905; Ohio, 1906; South Carolina, 1904; Washington, 1903; West Virginia, 1907; Wyoming, 1905. In Delaware, Nebraska and Ohio the board is authorized to call on an osteopath to assist in the examinations. In nine states there is no existing regulation regarding this sect. These states are: Alabama, Arizona, District of Columbia, Georgia, Maine, Mississippi, New Hampshire, Nevada and Rhode Island.* In Alabama and Arizona, osteopaths can secure licenses on taking the same examination as other applicants.

Regarding the legal status of osteopathy as a system, in the following states it has been declared to be the practice of medicine, either by statutory enactment or by decision of the courts: Alabama, Arizona, California, Delaware, Indiana, Iowa, Kentucky, New York, Ohio, Texas, Utah, Virginia, West Virginia, Wisconsin, Wyoming. In the following states it has been declared not to be the practice of medicine: Arkansas, Colorado, Connecticut, Georgia, Idaho, Illinois, Kansas, Louisiana, Michigan, Minnesota, Missouri, Montana, Nebraska, North Carolina, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee and Vermont, making fifteen states in which the osteopath is a practitioner of medicine and twenty states in which he is not.

The absurdity and utter inconsistency of such a situation is apparent, the entire fallacy, from a scientific standpoint, lying in the confusion by courts, lawyers, and legislators of therapeutic measures and systems of practice with so-called "schools of medicine," as well as the equally common absurdity of restricting one's conception of the meaning of the term "practice of medicine"—which has been adopted as a convenient phrase to describe the work of those who care for the sick—as being limited to the administration or use of drugs. This fallacy arises from the fact that, in the popular mind, the most obvious means used for treating diseases has gradually come to stand for not only the entire system of treatment but also for the entire mass of scientific knowledge.

From a legal point of view, the absurdity of sectarian legislation lies in the establishment of two standards of requirements for the same privilege. The state, in the exercise of its police power to regulate or restrict occupations, professions and trades, requires that each individual desiring to engage in the work of treating the sick, must present certain qualifications and must satisfactorily pass an examination test of a certain standard. Such a standard of qualification having been established, it is plainly inequitable for the state to adopt a law admitting individuals to the same privileges on a lower basis of qualification, since such favoritism constitutes class legislation and is clearly unconstitutional. In other words, there is no more legal justification for two standards for the practice of medicine in any state than there is for two standards for the practice of law, nor has a state any more right to recognize sectarianism in medicine than it has to recognize sectarianism in the legal profession, or in religious matters. We can easily conceive of the reception which would be afforded an individual who would present a bill in any of our state legislatures asking that a certain sect or class of men, unlearned in the law and unrecognized in legal circles, be authorized to practice law, to appear before the courts and to exercise the rights and privileges of attorneys with one-half or two-thirds of the intellectual and technical training required by the bar association of the state. Such a bill would be laughed out of the legislature, even if any member had the temerity to present it. Yet this is exactly the situation which sectarian medical laws create, so far as state recognition of medicine is concerned. The reason why state legislatures have committed absurdities along medical lines which they would not tolerate for a moment on legal subjects, is that the majority of the members of the legislature are informed on legal questions and consequently can legislate intelligently, while on medical subjects they are entirely uninformed and are consequently more easily influenced by their prejudices and personal relations.

CHART 4.—INTERSTATE RECIPROCITY IN MEDICAL LICENSURE

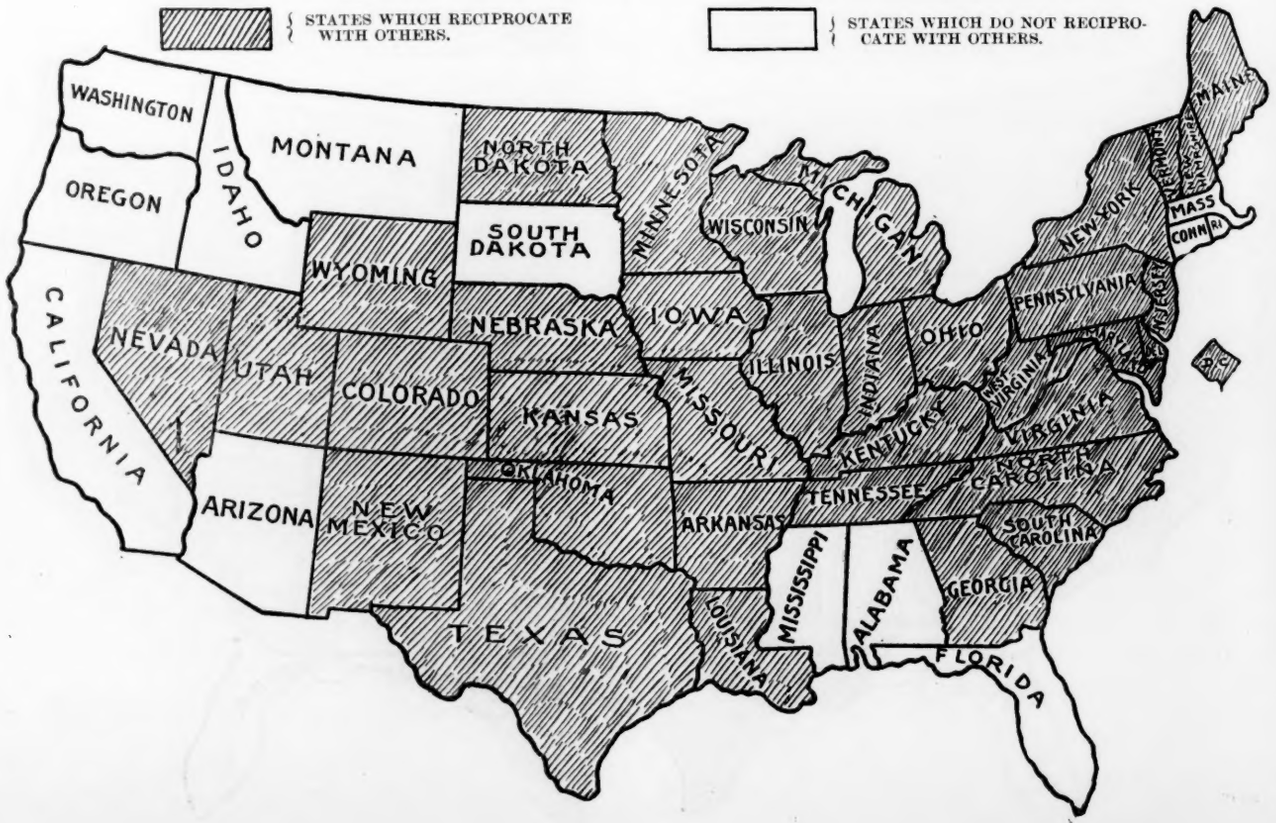


CHART 5.—STATES HAVING SECTARIAN BOARDS

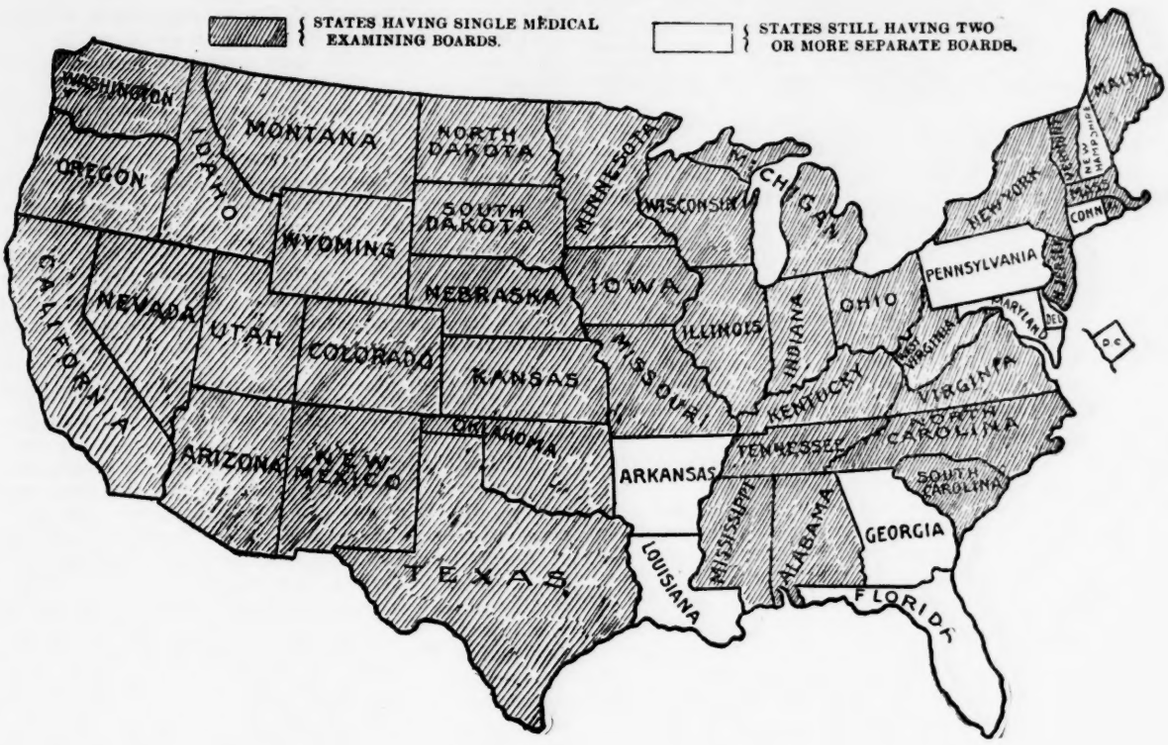
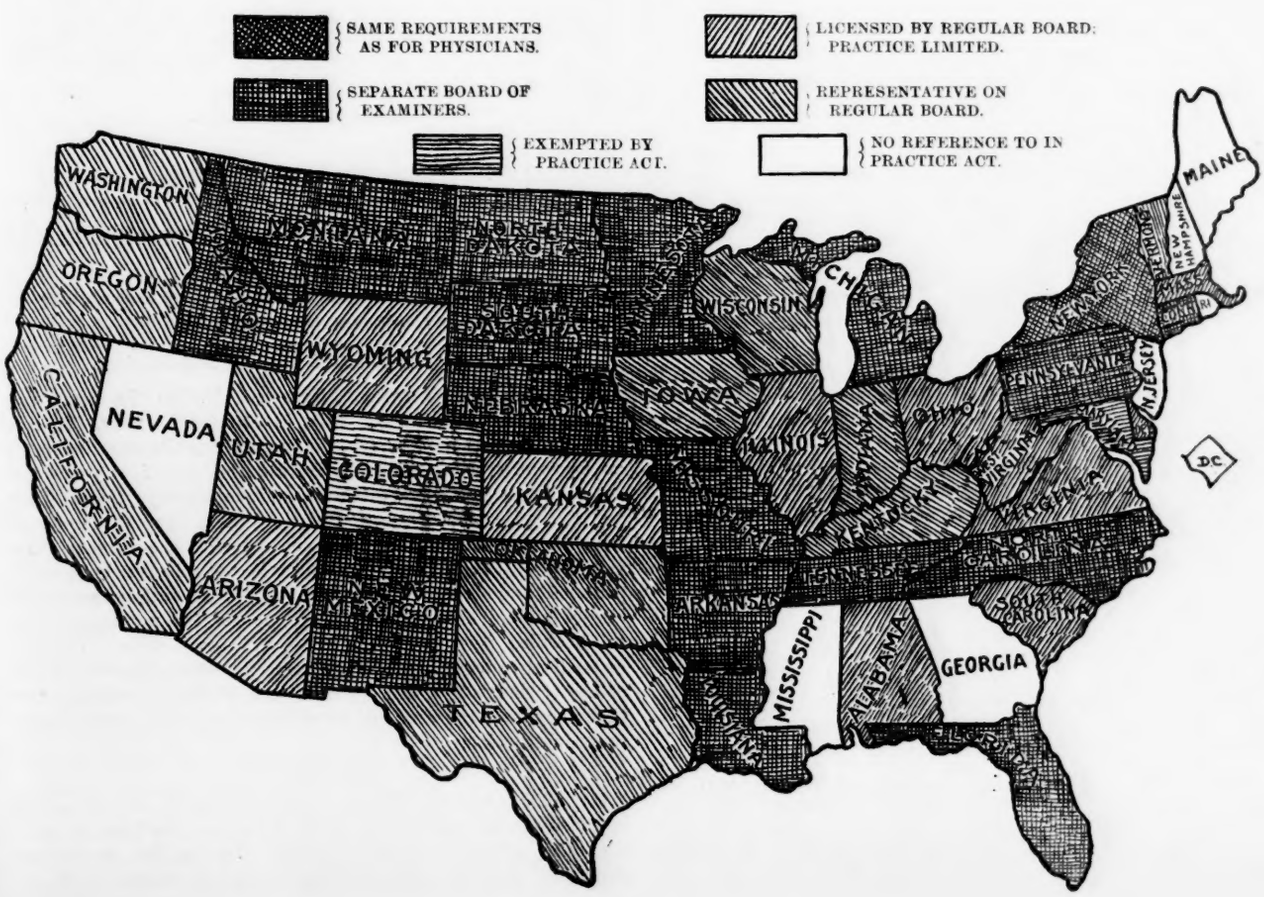


CHART 6.—OSTEOPATHY



Book Notices

TEXT-BOOK OF EMBRYOLOGY. By Frederick Randolph Bailey, A.M., M.D., Adjunct Professor of Histology and Embryology, College of Physicians and Surgeons (Med. Dept. Columbia Univ.) and Adam Marion Miller, A.M., Instructor in Histology and Embryology, College of Physicians and Surgeons (Med. Dept. Columbia Univ.). Cloth. Pp. 672, with illustrations. Price, $4.50. New York: William Wood & Co., 1909.

This book, while including subjects of interest to the general student of embryology, is primarily intended "to present to the student of medicine the most important facts of development, at the same time emphasizing those features which bear directly on other branches of medicine." It is accordingly divided into two parts and an appendix. Part I deals with general development. Part II with the development of the adult tissues and organs. To each chapter there is appended a good bibliography and "practical suggestions" for laboratory work, embracing the subjects dealt with in that chapter. In each chapter of Part II there is added under "anomalies" an embryologic consideration of malformations peculiar to the structures taken up in the respective chapter. There is also a special chapter on teratogenesis in which are discussed duplicity of structures and fetus, defects in fetus and the causes underlying the origin of monsters.

Part I includes a discussion of the cell, mitosis, the male and female, sex cells, maturation, fertilization, cleavage, the germ layers, the fetal membranes and the development of the external form of the body. While this is primarily a text-book of human embryology, yet, owing to the scarcity of early human embryonic material, early development as seen in the lower forms is of necessity resorted to. The simpler types of development, such as that of the Amphioxus, the chick and the frog constitute the basis for the consideration of the development of the germ layers. It is to be regretted that Chapter V (cleavage) and Chapter VI (the germ layers) do not compare favorably with the remainder of the book. These subjects form almost the entire basis for the field of embryology, and any inadequacy or errors in this part of a text-book are particularly serious.

Part II embraces the development of the connective tissue, the skeletal, muscular, vascular, respiratory, circulatory, urogenital, integumentary, and nervous systems, the alimentary tube and appended organs, the organs of special sense, and teratogenesis, and is a decided improvement over Part I. This is especially true of Chapter XVII (the nervous system), which is the best part of the book. Here a very difficult subject is treated in a comprehensive yet lucid manner, which places it easily within the grasp of the average medical student. One would naturally expect to find the name of the author of this chapter (Dr. Oliver S. Strong) on the title-page. The nervous system covers practically one-fifth of the book, yet Dr. Strong is only slightly mentioned in the preface. The development of the vascular system (Chapter X) is also well brought out.

There are 515 illustrations in the text. In Part II they are in the main good, well selected, and compare favorably with those of the best English text-books of embryology. The general plan of the book is an excellent one, but is perhaps better suited to a more extensive work on the subject. It is doubted if sufficient time can be spared from an already well-crowded curriculum to cover the subject of embryology as outlined in this text. One would think that the authors, in writing a general text for medical students, had shown a slight tendency to place it beyond their grasp; since an adequate knowledge of the great variety of subjects dealt with and of such subjects as teratogenesis and the causes underlying the origin of monsters, can not be obtained from so brief a text. A great deal of supplementing by lectures and original articles would be required, which would require more time than can be ordinarily devoted to the subject. The book is well printed. Several technical errors (due probably to oversight) and apparent contradictions in Part I will doubtless be corrected in the first revision of the book.

THE ERRORS OF MIND-HEALING. By Reinhold Willman, M.D., St. Joseph, Mo. Cloth. Pp. 179. Price, $1. St. Joseph, Mo.: The Advocate Publishing Co.

Dr. Willman, with the praiseworthy intention of setting forth, as he says, the view that the physician can and must take of the Scriptural records of miracles, argues to show that there is nothing in common between those miracles and the modern use of hypnotism, suggestion, faith healing, etc. Accepting the accuracy of the records, which a believer in Christianity is obliged to do, he seems to us to be on the right track. There are some clergymen and critics who attempt to reconcile the New Testament miracles with modern science and account for them as far as they can by known phenomena. Dr. Willman shows the fallacy of this and makes it clear that their only alternative to accepting the Biblical statements is to doubt the records. In the latter part of his book he takes up modern faith healing, Eddyism, Dowieism, etc., and shows up the commercial spirit that underlies nearly all of them. We wish he could have had his book revised to free it from certain slips in the author's English as well as numerous typographical errors. His quotations from Mrs. Eddy's "Science and Health" and the text-books of Emmanuelism are rather apt in support of his argument.

THE GREATEST GOOD OF MANKIND: PHYSICAL OR SPIRITUAL LIFE. By William Wenzlick, LL.B., M.D. Cloth. Pp. 374. Price, $1.50 net. Chicago: Published by the Author, 1206 Lawrence Ave.

This book is made up of alternate opposed views in regard to questions of sociology, religion, etc., by two supposed writers, Dr. Fact and the Reverend Faith. Dr. Fact, the materialist, critic of the Bible after Tom Paine, and opponent of prohibition, represents Dr. Wenzlick's sentiments, while the Reverend Faith is a severe specimen of the cloth and not at all such a lovable representative of religion as its friends would prefer to have speak in refutation of the scoffer's sophistries. This method of setting up a man of straw or arguing with a dummy is a convenient one because the disputant has in it altogether his own way. We very much doubt its effectiveness in argument, however. Dr. Wenzlick has evidently done a large amount of reading of the Scriptures, but in a very critical and hostile spirit, which would probably give offense to a large majority of the reading public if his book were so fortunate as to come under their notice. In fact, a large proportion, we believe, of those who agree with him more or less in his ideas of personal liberty, so-called, would take offense at his sentiments in some other lines. His estimate of the value of alcohol and the blessing of the saloon will not be shared by the majority of conservative physicians.

Society Proceedings

ASSOCIATION OF AMERICAN TEACHERS OF THE DISEASES OF CHILDREN

Third Annual Meeting, held at Atlantic City, June 7, 1909

(Concluded from page 477)

Personal Relations of Teacher and Student

DR. EDWARD J. WYNKOOP, Syracuse, N. Y.: In many colleges, pediatrics is taught only in the fourth year. It is a most important subject for the young practitioner, inasmuch as two-thirds of his practice during the first few years will consist of accidents and diseases occurring among children. Only by the institution of more clinical work in the college can we hope to come in more personal contact with the student. The identity of the individual student is not always known. A personal knowledge of each man should be insisted on. The classes should be divided into sections of ten men each so as to establish personal relationship with each man. Teachers in medical colleges should take more interest in the social side of the student's life, and teachers should likewise bear in mind that they owe the student something more than merely classroom instruction.

DISCUSSION

DR. A. C. COTTON, Chicago: The tendency to-day is toward larger teaching faculties so as to bring the students in touch with the subject in smaller classes. The teacher has an opportunity, therefore, of studying the actual needs of the in-

dividual student. The large staffs of the hospitals connected with our colleges enable the assistants to report to the chief of the staff the needs of the various students. Frequent quizzes, and the visiting of the staff by the students, partly fills the void created by the departed preceptor who was so valuable in olden times.

DR. A. JACOBI, New York City: The only place to teach medicine is at the bedside of the patient, or, if the college has a hospital connection, from material secured from the outpatient department. Unfortunately, most of our medical schools have no hospitals. We have too many students, or, perhaps, we have too many colleges. Large schools with large hospitals require a large teaching staff, and the aim of the teacher should be first, to secure suitable material for instructing the students, and, second, to divide the classes into sections of ten or twelve men each, so as to impart almost individual instruction.

Report of the Committee on the Teaching of Pediatrics

DR. S. W. KELLEY, Cleveland: Each college should have a chair of pediatrics with full professorship. Pediatrics should be studied in the junior and senior years. The course should be graded and include the anatomy and physiology of infancy and all the affections of childhood both medical and surgical. The surgical side of pediatrics may be taught in the chair of surgery. A large part of the teaching should be clinical. The classes should be divided into sections of ten or twelve men. No college without a hospital or dispensary for children is prepared to successfully teach diseases of children.

How Should the Percentage Method of Milk Modification be Taught?

DR. J. FINLEY BELL, Englewood, N. J.: The chemical and physical constituents of cow's milk as compared to those of mother's milk are so different that the percentage method as taught to-day does not solve the problem of milk modification. The proteid and fat percentages are at fault. The student in college should be taught how to examine specimens of milk. We should teach general principles only, permitting the student to form his own conclusions. The universal adoption of the metric system will simplify the matter and render the results more accurate. In preparing the formulas a knowledge of the physiologic needs of the infant is necessary.

What Should Be Taught Concerning Proprietary Foods and Condensed Milk?

DR. I. L. POLOSKE, Detroit: The students in our colleges should be taught the difference between cow's milk and proprietary foods. Proprietary foods are deficient in fat and have an excess of carbohydrates. Condensed milk and proprietary foods predispose the baby to scurvy, rickets, constipation and the various infectious diseases. All proprietary foods are rich in flour and dextrin. The physician must know the value of the food he prescribes and with patented foods this is impossible. Condensed milk should be used in catarrhal diseases where cow's milk can not be used. The enormous number of proprietary foods on the market is due to the large number of physicians who prescribe them.

DISCUSSION

DR. H. M. MCCLANAHAN, Omaha: There are two reasons why proprietary foods are used: 1. They are advertised directly in the home. 2. A large percentage of the profession is indifferent as to the methods of milk modification. It is a very good plan to warn students regarding the harmful effect of these patented foods.

What Should Be Taught About Mixed Feeding?

DR. H. M. MCCLANAHAN, Omaha: Science and art can not prepare a food equal to breast milk. Mothers should nurse their babies for at least six months. Many mothers wean babies early on the advice of careless physicians. By mixed feeding is meant the substitution of one or more breast feedings daily by some other food. There are two reasons for mixed feeding: 1. When the mother's health is impaired, or she is suffering from loss of weight or anemia. 2. When the baby fails to thrive, does not sleep well, or has indigestion frequently. Mixed feeding is better and safer than artificial feeding. Teachers should instruct students as to the importance of mixed feeding. Careless weaning often means loss of life, while a combination of bottle and breast feeding in many cases will save the baby's life. The laity should be educated on the subject of mixed feeding.

What Shall We Teach Concerning the Feeding of Difficult Cases?

DR. G. R. PISEK, New York: We meet with two classes of difficult cases: 1. Infants that are healthy at birth but that develop digestive disturbances after being breast fed. 2. Babies that do not thrive from the first. Teach the student the value of foods and the physical and chemical properties of milk. The student should be taught how to prepare the milk formulæ and he should likewise be taught the elementary laws of biology. Any form of food that agrees may be used as a starting point. Study the individual needs of the infant and gradually work up to a formula that will meet the particular requirements.

Discussion on Infant Feeding

DR. J. W. VAN DERSLICE, Chicago: As soon as we eliminate methods so soon will we get results in these feeding cases. We must stop teaching methods and teach infant feeding. This ought to be our next step. In regard to mixed feeding, I prefer the admixture of cow's milk and mother's milk to giving the child table foods.

DR. A. C. COTTON, Chicago: Mixed feeding does good when mother's milk fails. It is a mistake to recommend the bottle in all cases except where there is a contraindication to breast feeding. Breast-fed babies have dyspepsia which is not always due to improper feeding but rather due to bad mother's milk.

DR. I. L. POLOSKE, Detroit: Teach the obstetrician not to recommend early weaning and early recourse to the bottle. He is usually in charge of the case for the first few weeks and can be a power for much good in this direction. As soon as you advocate bottle feeding as a substitute for breast feeding you lessen stimulation to the breast and hence there is less breast milk.

AMERICAN ORTHOPEDIC ASSOCIATION

Twenty-second Annual Meeting, held at Hartford, Conn., June 14-16, 1909

(Continued from page 479)

Method of Anchoring Transplanted Tendons

DR. S. L. MCCURDY, Pittsburg, described his method as consisting in wrapping the tendon entirely around the bone, passing it through the ligament, or securing it to some dense or firm tissue, rather than in simply suturing it to the periosteum, thus guaranteeing a firm anchorage after union.

DISCUSSION

DR. RUGH: I can testify to the value of this method. I think that the less one disturbs the bone from its position the less one will interfere with nutrition and the more quickly there will be union. Formerly I sawed off the ends of the bone squarely, but now I simply saw one side, and then go in through the other way. I have also used the method of having a hole through the end of the drill, as well as the wooden screws. I have never had any harm result from using silver wire.

DR. WILSON: I think that many of the objections to silver wire lie in the quality of the metal used. Iron always produces irritation by corroding and requires removal in a few weeks.

DR. MCCURDY: I have been taking *x*-ray pictures from time to time, and I find that the shadow cast by the wire is growing less, showing that it is being disintegrated and will gradually disappear.

Unusual Cases of Caries of the Spine in Adults

DR. E. G. BRACKETT, Boston, considered some of the special features of this condition and the etiology of some of the spinal symptoms. He also made an attempt to classify them

into various types for the purpose of study, with reference to a possibly more accurate diagnosis of the location of the part of the vertebra affected.

DISCUSSION

DR. CLARENCE L. STARR, Toronto: The picture representing the vertebræ broken down brings to my mind the case of a child that I had under treatment for three years on a Whitman frame in hyperextension. She died of miliary tuberculosis, and the specimen showed no attempt at fusion. This impressed on me that by continued hyperextension we may prevent the fusion of the bones, and that if we succeed it must be by a prolonged treatment with apparatus.

DR. A. THORNDIKE: These studies bring out the fact that the process of bony union takes place late in Pott's disease. Until the tuberculous process dies out the bony process will not begin.

DR. H. L. TAYLOR: We should be careful about diagnosing spinal neurasthenia until we have excluded with certainty caries of the vertebræ.

DR. C. RIELY: I think that the long duration of the disease in adults without deformity is due to the great amount of mineral salts in them as compared with children.

An Operation for Infantile Cerebral Hemiplegia, With Reports of Two Cases

DR. JOSEPH JOHN NUTT, New York, had devised this operation to give prolonged rest to the lower neurons and thereby rest the upper neurons on the hypothesis that the destruction of cerebral tissue due directly to the original lesion was small in comparison with the total area involved. The rest and repair of certain cells directly by the operation should influence indirectly the rest and repair of others.

DISCUSSION

DR. COOK: How long do you think the interval would be before the nerve grew together again?

DR. J. J. NUTT: I did not find much information about this in the literature. In one case it was about nine months.

DR. RUGH: Have there been any beneficial effects in cases of paraplegia or in the diplegic forms of spastic paralysis, and was sensation entirely done away with when motion was arrested?

DR. J. J. NUTT: Sensation in the small sciatic was entirely paralyzed. A great many cases of diplegia were reported in which more improvement was noted than one would expect from simple tenotomy.

DR. BAER: In cases of anterior poliomyelitis, in which I tried nerve severing, the effort was to see whether division of the sciatic nerve and the twisting of the nerve on itself would let the neurons spread out and go down the bad paths into the distal portion of the nerve, as well as the good, but the neuron selected the path it had originally gone down.

DR. MYERS: When did the lesion occur?

DR. J. J. NUTT: The patient was three years old when it occurred and is now thirteen.

DR. BLODGETT: Has the mentality improved?

DR. NUTT: The nurse tells me she has noticed some.

DR. E. R. FISHER, New York: In this class of cases we have a condition that can be relieved, but not cured. There is no inflammatory condition, but an irregular cell action, or overaction. By the removal of this sensory irritation the cortex is given a chance to rest. For the time being the muscle is paralyzed, and this gives an opportunity to apply treatment to the opposing muscle, which is weaker than the contracted or spastic muscle. I do not believe that we can expect a return of mental power except in young cases.

DR. E. RYERSON, Chicago: I have obtained good results by transplanting the hamstrings forward into the patella, the children learning to walk in a year and a half. For the children who are entirely idiotic nothing can be done mentally; for the others a great deal can.

DR. BRADFORD: I should like to know whether the injection of curare has been tried to paralyze the nerve.

DR. FISHER: I have a faint recollection that this was alluded to in a discussion at the last meeting of the American Neurological Association, but that it was not successful.

(*To be continued*)

Medicolegal

Physicians as Witnesses When They Have Not Treated Injured Parties

The Supreme Court of Illinois says, in the personal injury case of Fuhry vs. Chicago City Railway Co., that a physician who has not treated the injured person, but has made an examination to enable him to testify on a trial as to his condition, must base his opinion on objective, and not subjective conditions. He can not relate nor take into consideration the self-serving statements of the injured person made to him, not with reference to his treatment, but with reference to his trial.

With regard to a question asked a physician the object of which was to obtain his opinion as to whether a certain condition could, would, or did result from certain injuries, the court says that the question whether it did so result was for the jury to determine, but, being one not within the knowledge of men of ordinary experience, the opinions of physicians having knowledge of that subject were proper to be considered and did not invade the province of the jury. It was immaterial whether the witness testified that the injury might or could cause the condition or that it did cause it. In any event the testimony was merely the opinion of the witness based on the facts he had testified to. It was still for the jury to determine the truth in regard to those assumed facts, as well as any others which might tend to confirm or modify their reliance on the opinion given.

Life Tables with Reference to Person Engaged in Hazardous Business

The Court of Appeals of Kentucky says, in Louisville & Nashville Railroad Co. vs. McMillen, a personal injury case brought by the latter party, that life tables were properly allowed to be given in evidence to show the plaintiff's expectancy of life. The fact that he was in a hazardous business, and that the tables were based on the expectancy of life of persons in ordinary occupations, should be taken into consideration by the jury; but, after all, the tables were some evidence of the probable duration of life, and perhaps the best evidence that could be obtained on the subject. There was no presumption that he would continue in a dangerous business. His employment might be ended at any time, and so this was only a circumstance to be considered by the jury in determining what weight to give to the life tables.

Cross-Examination as to Frequency of Experts Appearing as Witnesses

The Supreme Court of Illinois says, in the case of McMahon vs. Chicago City Railway Co., where a physician was cross-examined as to how many cases he had testified in as an expert for the street car lines of Chicago, that the extent of an examination along this line is largely within the discretion of the trial court. No definite limit can be prescribed as a rule of law. The weight to be accorded to the opinion of an expert witness depends largely on his means of information and knowledge, as well as his bias and inclination or relation to the parties. It is always competent to show the interest of the witness. The court thinks, however, that the question should have been limited to the number of times the witness had testified for the defendant company.

Alcoholic Medicinal Preparations

Robert Williams, Jr., acting commissioner, states that it is the practice of the office of commissioner of internal revenue, where preparations examined by it are found to be clearly and unmistakably fakes, being chiefly composed of whisky with little or no medication, and where the character of the preparation must be known to the druggist handling same, either by reason of its appearance or by the nature of the demand for it, to require special tax for its sale without any previous notice being given.

This office holds that in a genuine medicine the alcohol should not be more than is necessary for the legitimate pur-

poses of extraction, solution, or preservation, and that the preparation should contain approximately a U. S. P. dose of some medicinal ingredient of recognized value, either alone or in combination with other compatible drugs. Where a substantial effort has been made to introduce medication, without, however, coming up to the standard set by this office, it is the practice to notify the manufacturers and give them an opportunity to change their formulas; and in such cases, while the manufacturer is required to pay special tax on account of the manufacture and sale by himself of such preparations, special tax is not required of retail druggists on account of the sale of the same in good faith for medicinal use only, if the formula is changed, or until after public notice has been given, if the manufacturer declines to make such change.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York

July 31

1 *Parasitism and Natural Selection. R. G. Eccles, Brooklyn.
2 Renal Tuberculosis and Its Surgical Treatment. C. G. Cumston, Boston.
3 Etiology and Treatment of Intestinal Hemorrhage. G. M. Niles, Atlanta, Ga.
4 *An American School of Tropical Medicine. I. W. Brewer, Fort Warren, Mass.
5 Case of Parenchymatous Keratitis in Acquired Syphilis. B. Chance, Philadelphia.
6 The General Practitioner as a Dermatologist. B. F. Ochs, New York.

1. **Parasitism and Natural Selection.**—Eccles says that when we study the distribution of parasites in time and place, we find them such as would be a source of stimulation of germplasm, such as is required in a world that is biologically what we live in. Disease may thus yet prove to be a blessing instead of a curse. Ineffective disease in vertebrate and invertebrate animals is a contest of cells with cells, protozoan and protophyton against metazoon for food. Many of the pathogenic micro-organisms discovered infest insects, molluscs, fishes and amphibians.

Parasitism is as old as the world, and is found in fossil remains millions of years old; it is hereditary. The sporozoa are entirely parasitic, one form inhabiting the spleen, another the liver and gall-bladder, etc. These parasites have become so specialized that some of them can live only in certain structures and higher forms of animal life. Parasite and host have learned how to repel each other's attacks, the one by secreting special enzymes to dissolve envelopes, the other by the formation of antibodies to hold poisons in abeyance. Immunity is a gaining of structural and poisonous protection through generations of struggle. Disease is an important part of the biotic fight for food and an essential part of the theory of natural selection. Survival and fitness are due to a triumph over disease. There is no other factor so universally present. The first requisite in this struggle is health, and this is possible only among organisms whose progenitors have triumphed over disease, the weaklings having all been destroyed. Climate and isolation predispose to disease, to variation, but neither alone is an efficient cause of variation. Evolution is brought about by the introduction of the abnormal. The nearer we get to the germ-plasm the easier it is to produce changes in adult forms. All organic changes are the result of stimuli, and disease is the greatest form of stimulus.

4. **American School of Tropical Medicine.**—Brewer says that the sanitary administration of our new tropical possessions demand medical officers acquainted with the diseases peculiar to the tropics. The teaching in medical schools gives no knowledge of tropical diseases, and even if such were given there would be no clinical material. There should be established in this country a school of tropical medicine and attached to it should be a hospital in which the needed clinical material should be collected.

Boston Medical and Surgical Journal

July 29

7 Histologic Classification of Tumors. F. B. Mallory, Boston.
8 *Injections of Sea Water in Skin Diseases. C. J. White, Boston.
9 *Psychoses Beginning in the Puerperal States. C. Ricksher, Hathorne, Mass.
10 Education of the Child's Nervous System. A. C. Eastman, Springfield, Mass.
11 Vestibular Nystagmus and Its Relation to the Sound Perceiving Apparatus. H. F. Byrnes, Springfield, Mass.
12 Isolation of the Bacillus of Typhoid from the Breast Milk of a Woman Ill with the Disease. C. H. Lawrence, Boston.

8. **Injections of Sea Water in Skin Disease.**—Sea water contains the chlorids of sodium, magnesium, calcium and potassium, and the sulphate of magnesium. These salts have different and opposite effects, i. e., sodium chlorid is a stimulant to nerves and muscles, while the magnesium, calcium and potassium salts are inhibitory in their actions. Mayer describes these opposing forces in the case of one of the medusæ whose pulsations are produced by the electrical (?) energy generated, as in a battery, by the action of these various salts.

With this phenomenon as a basis for the possible therapeutic power of sea water the following experiments were undertaken by White: The water was obtained from the ocean about thirty miles south of Woods Hole, Mass., and from a depth of thirty feet, thus insuring a pure, uncontaminated supply. This water was placed in sterile jars and brought to Boston, where it was purified by passing through a Chamberland filter and rendered isotonic with blood serum by the addition of sterile tap water in the proportion of ten parts of the former to twenty-three of the latter. This product was placed in sterile glass ampullæ holding 200 c.c. One end of these receptacles was bent in the form of a hook and the other drawn out into a straight line, and both extremities were sealed.

The injections were made three times a week deep into the buttocks of the patient, who lay on his side and allowed the fluid to run into the tissues by the force of gravity, the ampulla being suspended about three feet above the body and the water passing through a sterile rubber tube and long iridoplatinum needle. The rapidity of the injections varied a great deal in the different patients, some requiring at least a half hour to take in 150 c.c. The pain and discomfort attending this maneuver was usually very slight and the only immediate effect was the desire to urinate; while the general after-effects were practically *nil*, although one patient was obliged to take to her bed for twenty-four hours twice on account of chills, fever, lassitude and nausea.

The following cases were so treated: Pemphigus foliaceus; scrofuloderma; psoriasis; eczema seborrhoicum; malingering, varicose ulcers and general fibromatosis; lupus vulgaris (two cases); erythema induration and psoriasis; chronic eczema (three cases); lupus vulgaris and scrofuloderma; scrofuloderma and xeroderma. From the study of these fifteen cases treated by the injections of isotonic sea water, certain conclusions may be drawn:

1. This unusual therapeutic measure produces a certain amelioration of symptoms in widely various dermatoses. 2. This improved condition is most conspicuous in tuberculous processes, especially in tuberculous ulcers. 3. As a whole, this therapeutic agent is a great disappointment. 4. Sea water can be injected in surprisingly large amounts, even into children, without causing much pain or other untoward symptoms. 5. Sea water injected into the buttocks causes immediate desire to micturate, a continued easy and sometimes increased number of daily movements of the bowels, as a rule a slight tendency toward increase of bodily weight, and at times a distinct improvement in the well-being of the recipient.

9. **Psychoses in Puerperal State.**—Ricksher says that there is no psychosis which can be strictly called a puerperal psychosis, but there is no doubt that the puerperal states can act as an exciting cause of a psychosis in certain women under certain conditions, which conditions are at present unknown. The mortality of children born of mothers who become insane during pregnancy is very great. The puerperal states may be exciting causes of attacks of manic-depressive insanity in women who have never before been insane, and in women who have had previous attacks of this disease, childbearing is apt to be the exciting cause of another attack. In women suffering from dementia præcox the puerperal states cause an exacerbation of the acute symptoms and cause the psychosis to become more active.

Homicide is comparatively rare among women becoming insane during this period and is more liable to occur in patients suffering from dementia præcox than any other psychosis, while attempts at suicide are less numerous in these cases but are more liable to occur in patients suffering from the depressed form of manic-depressive insanity. Eclampsia and the toxic infections are not more frequent in women who become insane than in women who are normal mentally and these factors are of little moment in any but the toxic deliria. Illegitimate children are not given as the cause of insanity as frequently in this country as in Europe. The reason for this is not determined. Comparatively few women who later become insane show abnormalities in pregnancy, and one can not tell from the character of the pregnancy whether a woman will become insane after labor or during lactation.

New York Medical Journal

July 31

13 Compressed Air Disease from a Clinical Aspect. L. M. Ryan, Brooklyn, N. Y.
14 Erythema Nodosum. H. Fox, Bath, Maine.
15 *Prognostic and Diagnostic Value of the Leucocytes and Differential Count in Acute Abdominal Infection. J. J. Coons and H. O. Bratton, Columbus, Ohio.
16 Frequency of Cancer of the Cervix Uteri. J. A. McGlinn, Philadelphia.
17 *Common American Foods. H. S. Greenbaum, Baltimore.
18 *Treatment of Epistaxis. B. Robinson, New York.
19 A Criticism of the Usual Surgical Treatment of Varicocele of the Broad Ligament. S. E. Tracy, Philadelphia.
20 Notes on Rhus Toxicodendron. W. W. Ford, Baltimore.

15. **Leucocytes and Differential Count.**—Coons and Bratton report 184 cases of acute appendicitis in which the blood examination was made a few hours previous to operation, except in a few instances in which the patient died before operation or there was a delay for some reason. Following a scheme of Noehren, of New York, the cases were divided into five groups: 1, acute suppurative appendicitis, inflammation confined to appendix; 2, gangrene; 3, abscess; 4, perforation, local peritonitis; 5, spreading peritonitis—the infection not confined by adhesions; 6, general peritonitis. Of the cases of acute suppurative appendicitis, twenty-six out of forty-one had a polynuclear count between 80 and 90; in one instance the polynuclears were 91 per cent. The leucocytes varied between 10,000 and 20,000 in thirty-four of the forty-one cases. In cases with abscess, thirty out of the sixty-two cases had polynuclears from 80 to 85 per cent. There were seventeen cases below 80 per cent.; thirteen, from 85 to 90 per cent.; two, above 90 per cent.

Of twenty-two cases of gangrene, ten had from 85 to 90 per cent. polynuclears. The leucocytes in no instance ran above 25,000; in four cases the white cells were not increased. Of the cases of perforation with local peritonitis, and spreading peritonitis, thirty-six out of forty-five cases showed polynuclears between 85 and 95 per cent. The leucocytes ranged, irregularly, from 10,000 to 49,000. Four cases with very high total leucocyte counts were found. One case with perforation, 40,000 and 91 per cent. The second, an abscess, with 40,300 and 89.3 per cent. The third, a case with free pus in the abdomen, not walled off by adhesions, 40,000 leucocytes, 89.9 per cent. polynuclears. The fourth, a case of spreading peritonitis, with 49,000 leucocytes and 85.6 per cent. polynuclears. The body resistance in these cases, as indicated by the high total leucocyte count, was unusually good, while the degree of infection, revealed by the percentage of polynuclears, was rather mild. These patients had a plus resistance or a falling line. They make good recoveries. The authors summarize their findings as follows:

Polynuclears below 75 per cent.: If there is a leucocytosis, one may look for an old infection, well walled off, may be an acute exacerbation. Usually there is a mild secondary anemia.

Polynuclears, from 75 to 80 per cent.: Indefinite; the history of the case and the patient should be considered. In our series of 184, 32 had polynuclears from 75 to 80 per cent.; 15 were abscesses; 11 acute suppurative appendicitis.

Polynuclears, from 80 to 85 per cent.: The patient is in no immediate danger unless the total leucocyte count is low, suggesting a poor resistance. If the leucocytes are increasing, an immediate operation should be advised if the relation of the polynuclears to the total leucocyte count indicates a good resistance. If the leucocytes remain stationary or decline, the surgeon should rely on the physical signs in making up his mind when to operate.

Polynuclears, from 85 to 90 per cent.: Look for a severe infection. If there is a proper leucocytosis, according to the chart, an immediate operation is indicated.

Polynuclears, above 90 per cent.: Virulent infection, grave prognosis. Twenty-five of our 31 cases above 90 per cent. had some form of peritonitis. Where there is no increase in the leucocytes, and the polynuclears high, little hope can be entertained for the patient from an operation.

17. **Common American Foods.**—Greenbaum has calculated the fuel value (calories) of a certain number of American foods per ounce (avoirdupois), utilizing almost entirely the results obtained by the United States Department of Agriculture, and in particular Bulletin No. 28 (revised edition), by W. O. Atwater and A. P. Bryant. He also submitted a few sample diets for patients suffering from obesity, which can easily be modified to the individual needs by utilizing his table. Personally, he prefers to use six meals a day, the usual breakfast, luncheon and dinner, with three small feedings between them. This has the advantage of preventing undue weakness and excessive desire for food at the main meals.

18. **Treatment of Epistaxis.**—Robinson favors plugging the nasal passages by taking a strip of aseptic, absorbent cotton, and twisting it round and round, so that it becomes about the size of the little finger, and then with a good light, a nasal speculum, and a director or stiff probe, fill the lower and middle meatus as far back as the posterior pharynx. After twenty-four or forty-eight hours the plug or plugs begin to loosen by reason of the nasal secretions produced and absorbed, and they should be carefully withdrawn and fresh ones substituted, if necessary.

Lancet-Clinic, Cincinnati

July 31

21 Obstetric Indications for, and Methods of, Artificial Dilatation of the Cervix. W. D. Porter, Cincinnati.
22 School Hygiene of the Eye. J. Wyler, Cincinnati.
23 Flexner's Antimeningitis Serum in the Treatment of Epidemic Cerebrospinal Meningitis. H. Woolerey, Indianapolis, Ind.

American Journal of Medical Sciences, Philadelphia

July

24 *Therapeutic Value of Calcium Salts in Gastric Tetany. F. P. Kinnicutt, New York.
25 *Common Modification of the First Sound of the Normal Heart Simulating that Heard with Mitral Stenosis. H. Sewall, Denver, Colo.
26 Gastrointestinal Autointoxication. J. Kaufmann, New York.
27 Acquired Chronic Acholuric Jaundice, with a Blood Picture at One Time Resembling that of Pernicious Anemia. F. P. Weber, London.
28 *Means by Which Infectious Diseases are Transmitted. A. H. Doty, New York.
29 Uncinariasis in Panama. G. H. Whipple, Baltimore.
30 Malignant New Growth in Childhood. W. A. Edwards, Philadelphia.
31 Viperine Snake Bite (of Undetermined Kind) Treated with Calmette's Sérum Antivénimeux (or Antivenim). W. F. Arnold, U. S. Navy.
32 Solitary Tuberculosis of the Breast. E. M. von Eberts, Montreal.
33 *Tuberculous Pulmonary Cavities in Infants. C. Y. White and H. C. Carpenter, Philadelphia.
34 Two Cases of Myxedema. R. L. Pitfield, Philadelphia.
35 *Fatal Anemia of Unknown Cause in a Child of Five Years, with Unusual Cells in the Blood. W. W. Barker, Dorchester, Mass.
36 Ocular Complications of Nasal Sinus Disease. A. Knapp, New York.
37 *Cammidge Reaction in Experimental Lesions of the Pancreas. J. Speese and E. H. Goodman, Philadelphia.
38 The Tonsils as Eliminative Organs. W. S. Ashhurst, Chihuahua, Mexico.

24. **Calcium Salts in Gastric Tetany.**—The case reported by Kinnicutt is of interest in view of the rarity of that form of gastric tetany associated with dilatation of the stomach and stagnation of its contents, of which it is an example; in the severity of the tetanic symptoms, and in the prompt inhibitory effect on the spasms of the calcium salts artificially introduced directly into the blood stream. It was found impossible to nourish the patient by means of the stomach. Vomiting was frequent on each attempt, in spite of copious and frequent lavage. Nutriment introduced after lavage by means of the stomach tube, although sometimes retained, was recovered later by the tube in like amounts, showing no signs of gastric digestion—only decomposition processes. Nutrient enemas were retained only exceptionally. There was almost complete anuria for the first twenty-four hours and until abundant subcutaneous clyses of salt solution had been given. Later the urine either was voided involuntarily or was recovered by catheterization. The scanty fluid stools were mostly involuntary. Although the tetanic symptoms obviously could be con-

trolled by the continued administration of the calcium salts, it was equally apparent that the patient would slowly die of inanition unless the evident gastric stenosis could be relieved by operation. Surgical intervention was decided against on the ground that any operation would be immediately fatal. The patient died suddenly.

Certain facts stand out prominently in the clinical study of the case: 1. The rapid and controlling effect of the soluble calcium salts on the tetanic symptoms. 2. The maintenance of this effect only by their continued use. 3. The comparatively slight effect of large infusions of salt solution, used alone. 4. The slight influence, if any, of parathyroid preparations (nucleoproteid) given by the mouth in controlling the hyperexcitability of the nervous system. The demonstration of the controlling influence of the soluble calcium on the characteristic symptoms of at least one important variety of human spontaneous tetany—the tetany of gastrectasis, with stagnating stomach contents—suggests a probable similar therapeutic value of these salts in other forms of the disease in human beings. The occurrence of typical tetanic spasm in a case of gastrectasis with parathyroid bodies of normal anatomic structure—and presumably—of normal functioning power.

25. **First Sound of Normal Heart.**—Sewall directs attention to a modification of the first sound of the heart which allies it qualitatively to the first sound as heard in mitral stenosis, but which predicates no organic lesion. In the structurally normal heart, especially in conditions of circulation excitement, the first sound frequently begins with the crescendo tone, simulating closely the faint and brief presystolic murmur or acute accent initiating the first sound in certain stages of organic mitral stenosis. The modification of the first sound may be pronounced either in the tricuspid or the mitral area, or both.

28. This will be abstracted later in the Department of Therapeutics.

33. **Tuberculous Pulmonary Cavities.**—White and Carpenter claim that cavity formation does not occur with the same frequency in infants as in older children. In their own autopsies, 16 per cent. of the infants dead from tuberculosis showed cavity formation; a far lower percentage than is reported by other observers. The infants usually succumb to the widespread process before the larger lesions have time to soften and their contents to be thrown off. In the author's cases tuberculous cavities in infants occurred most often at the root of the lungs, in the middle and lower lobes.

35. **Fatal Anemia of Unknown Cause.**—The cells described by Barker are large, rounded, or oval, with from one to three vesicular neutrophilic nuclei and pale basophilic protoplasm; in the protoplasm there is more or less coarse granular material staining a deep red; in some of the cells this material takes the shape of straight or slightly curved rods, some of them beaded. That these rods were not artefacts was proved by their appearance in many smears. They are similar to rods seen in the protoplasm of lymphocytes in a case of acute lymphatic leukemia reported by Auer, but the cells are not lymphocytes, nor prelymphocytes. They are obviously young cells, many of them in active division, but none of them show evidence of phagocytic activity. Barker's case is reported partly because of the rarity of fatal anemia in early childhood similar to the "pernicious" anemia of adult life, and partly to place on record the appearance of the cells described.

37. Abstracted in THE JOURNAL, June 15, 1909, p. 2017.

Journal of Experimental Medicine, Lancaster, Pa.

July 17

39 Morphology of the Parasite (*Histoplasma capsulatum*) and the Lesions of Histoplasmosis. A Fatal Disease of Tropical America. S. T. Darling, Ancon, Canal Zone.
40 An Experimental Glomerular Lesion Caused by Venom (*Crotalus adamanateus*). R. M. Pearce, New York.
41 *Blood-Platelet and Megalokaryocyte Reactions in the Rabbit. C. H. Bunting, Madison, Wis.
42 Experimental Lipemia in Rabbits. T. R. Boggs and R. S. Morris, Baltimore.
43 *Etiology and Pathology of Hemorrhagic Necrosis of the Pancreas (Acute Hemorrhagic Pancreatitis). E. L. Opie and J. C. Meakins, New York.
44 *A Comparative Study of the Diplococci Occurring in Epidemic Cerebrospinal Meningitis and Posterior Basic Meningitis. M. Wollstein, New York.
45 Influence of Temperature on Hemolysis in Hypotonic Solutions. P. A. Lewis.
46 *The Butyric Acid Test for Syphilis in the Diagnosis of Metasyphilitic and Other Nervous Disorders. H. Noguchi and J. W. Moore, New York.
47 *Standardization of the Antimeningitis Serum. J. W. Jobling, New York.
48 Continuous Respiration Without Respiratory Movements. S. J. Meltzer and J. Auer, New York.

41. **Blood Platelet and Megalokaryocyte Reactions.**—The platelets in the circulating blood are of uniform structure and of common origin. The curve of regeneration after destruction or loss is independent of those of regeneration of red corpuscles and of leucocytes, but at the same time as or preceding the increase in the number of platelets in the blood stream the megalokaryocytes of the bone marrow are increased in number. Bunting corroborates the discovery of J. H. Wright that the blood platelets are formed by segmentation of portions of pseudopodia separating from the megalokaryocytes.

43. **Hemorrhagic Necrosis of Pancreas.**—Hemorrhagic pancreatitis, so-called, is in reality primarily a necrosis of the parenchyma of the pancreas and should be called hemorrhagic necrosis, the inflammatory changes present being secondary to the necrosis or subsequent to infection. The so-called pancreatic apoplexy is the result of acute necrosis of the pancreas. In some cases necrosis may lead to little or no hemorrhage. "Gangrenous pancreatitis" is a late stage of hemorrhagic necrosis, a most frequent cause of which, in man, is the entrance of irritating material into the ducts of the pancreas, such as bile diverted by a gallstone lodged at the duodenal orifice of the common duct. Duodenal contents entering the duct may have the same effect, and in a small proportion of cases necrosis may follow injury of the pancreas, being in this case probably in part referable to simultaneous thrombosis. Anatomic peculiarities or anomalies of the pancreatic ducts may predispose to hemorrhagic necrosis.

44. **Strains of Diplococci in Meningitis.**—No reliable points of difference were found between strains of *Diplococcus intracellularis* from typical cases of epidemic meningitis, and several strains of cocci obtained from cases of posterior basic meningitis. With diplococci obtained from posterior basic meningitis acutely fatal meningitis was produced in monkeys. Consequently antimeningitis serum should be used in case of posterior basic meningitis.

46. **Butyric Acid Test in Syphilis.**—The cerebrospinal fluid in syphilitic individuals, like the blood serum, contains more globulin, and especially euglobulin, than normally. By virtue of this increase the following butyric acid reaction is applicable to the diagnosis of syphilis: One or two parts of spinal fluid are mixed with five parts of 10 per cent. butyric acid solution and heated over a flame to a brief boiling. One part of normal solution of sodium hydroxid is then added quickly to the heated mixture and the whole is boiled once more for a few seconds. The presence of an increased content of protein in the spinal fluid is indicated by the appearance of a granular or flocculent precipitate which gradually settles under a clear supernatant liquid. The granular appearance of the precipitate is held to be a positive reaction for syphilis or parasyphilitic affections. It was found that in the second or third stages of syphilis without direct involvement of the nervous system the cerebrospinal fluid gave the butyric reaction feebly and under these conditions the fluid did not give the Wassermann test nor a positive cell count according to the method of Rabaut; in hereditary syphilis a positive butyric reaction was obtained in 90 per cent. and a positive Wassermann in about 80 per cent of the cases examined; in the cases of cerebral and spinal syphilis examined every one gave the butyric reaction and the cell count, the Wassermann reaction being obtained in from 50 per cent. to 75 per cent.; the cases of general paralysis gave positive butyric reaction in 90 per cent., positive cell counts in 91 per cent., and positive Wassermann in 73 per cent.; in cases of tabes, the cerebrospinal fluid gave a positive butyric reaction and cell count in 100 per cent., and a positive Wassermann in 53 per cent. From these and other facts it is concluded that the butyric

acid reaction may be a ready means of distinguishing normal from pathologic cerebrospinal fluid and that it will prove useful as a routine method especially in detecting syphilitic and metasyphilitic lesions of the central nervous system, being a valuable addition to the Wassermann test.

47. **Standardization of Antimeningitis Serum.**—It is proposed to employ the specific opsonin present in antimeningitis serum as a measure of the therapeutic power of the serum; for the present a definite and suitable strength in opsonins should be adopted as a standard for antimeningitis serum and a minimum dilution activity of a 1 to 5,000 dilution of the serum is proposed as such. The specific meningococco-opsonin appears to be stable under proper refrigeration of the serum, so that the test may prove applicable also for commercial antimeningitis serum.

Journal of the Indiana State Medical Association, Fort Wayne

July

49 National Department of Public Health from an Indiana Viewpoint. C. A. L. Reed, Cincinnati, Ohio.
50 The Physician and His Avocation. F. R. Charlton, Indianapolis.
51 Acute and Chronic Gonorrheas Treated with Gonococcic Vaccine as an Adjunct to Routine Treatment. F. S. Crockett, Lafayette.
52 Mastoiditis Complicated with Acute Circumscribed Extradural Abscess. J. J. Kyle, Indianapolis.
53 Sketches of the Medical History of Indiana. G. W. H. Kemper, Muncie.
54 Appendicitis. B. Van Sweringen, Fort Wayne.
55 Tuberculosis of the Kidney. W. S. Ehrich, Evansville.

Memphis Medical Monthly

June

56 Résumé of the Progress Toward a "No Mortality Appendicitis." J. A. Crisler, Memphis.
57 Head Injuries. A. G. Payne, Greenville, Miss.
58 Dysentery in Infants and Children. A. G. Jacobs, Memphis.
59 The "Simple" Mastoid Operation. R. McKinney, Memphis.
60 How Are We Responsible for the Transmission and Dissemination of Typhoid Infection? J. R. Nelson, Whiteville.

Journal of Medical Research, Boston, Mass.

July

61 *Further Studies on the Phenomenon of Anaphylaxis. J. F. Anderson and M. J. Rosenau, Washington, D. C.
62 Neurophysiologic Effects of Anaphylactic Intoxication. F. P. Gay, E. E. Southard, Danvers, Mass., and J. G. FitzGerald, Boston.
63 An Attempt to Show Specific Racial Differences in Human Blood by Means of the Reaction of Fixation. J. G. FitzGerald, Boston.
64 The Mechanism of the Neutralization of Cobra Venom by Its Antitoxin. A. Calmette, Lille, France.
65 Agglutination of Human and Rabbit Blood Corpuscles by Crotalus Venom. J. McFarland and P. G. Weston, Philadelphia.
66 Gas Production of Bacillus Coli. F. G. Keyes.
67 *Bacteriology of the Blood in Convalescence from Typhoid, with a Theory of the Pathogenesis of the Disease. W. Coleman and B. H. Buxton, New York City.
68 Morphologic Changes in Nerve Cells Resulting from Overwork in Relation with Experimental Anemia and Shock. D. H. Dolley.
69 Further Studies on Fatal Septicemia in Young Chickens, or "White Diarrhea." L. F. Rettger.
70 Ligation of the Parathyroid Artery in the Dog. R. L. Thompson, W. E. Leighton and J. L. Swarts, St. Louis, Mo.
71 Transplantation of the Parathyroid Glandules, with Special Reference to the Result of Bone Operation on Tetany Parathyreopriva. R. L. Thompson, W. E. Leighton and J. L. Swarts, St. Louis.

61. See editorial, THE JOURNAL, July 31, 1909, p. 34.

67. **Typhoid.**—The results of this investigation support the view that the bacillemia of typhoid, as a rule, disappears at or about the time that convalescence begins. The theory of the authors in regard to the genesis of typhoid is briefly as follows: The entrance point is the lymphatic structures of the intestines, from which the bacilli enter the general lymphatic system and spleen, where they grow, and only relatively few are destroyed. During the incubation a limited number of bacilli may enter the blood but when the development of the bacilli reaches a certain point they enter the blood in large numbers and are then destroyed with liberation of endotoxins, the symptoms representing the reaction on the part of the host. As the disease advances in the typical case of typhoid progressing to recovery, the growth of bacilli in the organs is greatly arrested by the reactive processes of the host, fewer bacilli enter the blood, the symptoms diminish in severity. In fatal cases the growth of bacilli proceeds unchecked and the symptoms are not restrained, becoming perhaps even more intense. At or about the time of defervescence in the attack of typhoid, the bacilli practically disappear from the blood; the symptoms now come to an end and the convalescence proceeds nicely. In instances in which there is an intermittent fever not due to complication it is probable that the growth of bacilli in organs has not been checked and a limited number continue to enter the blood.

Journal of the South Carolina Medical Association, Florence

June

72 Urogenital Tuberculosis. B. Lewis, St. Louis.
73 Intraperitoneal Infusion of Normal Salt Solution. A. B. Knowlton, Columbia.
74 Things Doctors Should Know About Milk. F. A. Coward, Columbia.
75 Diuresis Dependent on Circulatory Changes. J. Forrest, Charleston.
76 Some Modifications of the Clinical Course of Acute Lobar Pneumonia. R. Wilson, Jr., Charleston, S. C.

Ohio State Medical Journal, Columbus

July 15

77 The Law and the Prophets. C. Pope, Louisville, Ky.
78 The Technic of the Modern Radical Mastoid Operation, with Sinus Thrombosis Complication. F. Allport, Chicago.
79 Diagnosis of Syphilis. M. L. Heidingsfeld, Cincinnati.
80 Binding of the Complement in the Diagnosis and Therapy of Syphilis. C. W. McGavran, Columbus.
81 Brown-Séquard Syndrome and Its Present Status. D. I. Wolfstein, Cincinnati.
82 A Plea for Higher Ethical Standards. A. S. Barnes, Columbus.

Journal of the Kansas Medical Society, Kansas City

July

83 Treatment of Fractures of Patella. G. M. Gray, Kansas City.
84 Cancer of the Female Breast. J. N. Jackson, Kansas City, Mo.
85 A Clinical and Bacteriologic Study of 41 Consecutive Cases of Diphtheria. E. E. Wuttke, Halsted, Kan.

Ophthalmic Record, Chicago

July

86 Roentgen Ray Flashes or Intermittent X-Rays in Treatment of Eye Diseases, with Report of Cases. D. H. Coover, Denver.
87 *An Analytic Criticism on the Cardinal Lid Symptoms in Exophthalmic Goiter (Basedow's Disease). G. F. Suker, Chicago.
88 Injury to the Cornea from Broken Spectacle Lens. S. G. Higgins, Milwaukee.
89 Gonorrheal Ocular Metastases. E. Stieren, Pittsburg.
90 Standard Test-Object for Determining the Near Point and the Range of Accommodation. A. Duane, New York.

87. **Exophthalmic Goiter.**—A new lid sign has been observed by Suker. It consists in this manifestation: While on downward rotation of the globe the lower lid is gently fixed the patient is then requested to rotate the globe rapidly upward while gentle retraction is made on the lower lid; the globe now ascends in an unsteady manner—much in the same way as the upper lid does in the von Graefe's sign. It is markedly accentuated in the presence of an exophthalmos, but is just as variable in its appearance as any of the other symptoms and no more value is to be attached to it than to any of the preceding ones. It has been found more often in the absence of exophthalmos than with it—however, most often in conjunction with a von Graefe or Gifford sign.

American Journal of Urology, New York

July

91 Rupture of the Bladder and Its Treatment. O. Pachmayer, Munich, Germany.
92 How to Open a Bladder. F. Cathelin, Paris, France.
93 Prostatic Abscess of Probable Diabetic Origin. L. Gross, San Francisco.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London

July 17

1 *Function of the So-Called Motor Area of the Brain. V. Horsley.
2 The Extremes in Mutability of Symptoms in Disseminate Sclerosis. J. D. Mann.
3 A Case of Convulsive Tic. T. W. E. Ross.
4 *Relative Advantages of Catheterization and Operation in the Treatment of Prostatic Enlargement. H. T. Herring.
5 Home Conditions and Eyesight. K. Pearson.
6 Medicine or Surgery in Early Cases of Cancer. S. Keith.
7 *Case of Landry's Palsy. F. N. Kapadia.
8 *An Easy Method of Removing the Nail of the Great Toe by Compression. P. Tytler

1. **Motor Area of the Brain.**—Horsley believes that the so-called motor area of the human cortex cerebri is really sensori-motor. The gyrus pre-centralis is in man the seat of representation of (1) slight tactility, (2) topognosis, (3) muscular sense, (4) arthric sense, (5) stereognosis, (6) pain, (7) movement. The gyrus post-centralis is in man part of the arm area in which the sensori-motor representation is of the same kind as that in the gyrus pre-centralis, but in it probably provision for sensorial co-ordination is greater, and that for efferent impulses less. The giant pyramids or Betz cells are not essential for the performance of purposive or voluntary movements. Purposive or voluntary movements can be performed after complete removal of the corresponding part of the gyrus pre-centralis.

4. **Treatment of Enlarged Prostate.**—Herring says that prostatectomy should not be undertaken unless the symptoms present are definitely ascertained to arise from that organ, and from nothing else. Prostatectomy should be deferred until after treatment by catheter has been tried. No harm can come of a delay of a month or more, and in septic cases much good will result, for the patient will improve and be in a better condition to bear the operation. Afterward, if the catheter fails or is found too irksome, recourse can be had to operation. When the patient is comparatively young, in good health, and has many years of life before him, operation is very rightly advocated as soon as it is proved that catheter treatment will not cure. The same may be said of those who, owing to their position in life, calling, or lack of funds, are unable to carry out the few simple details necessary in sterile catheterization. Prostatectomy undoubtedly is the best treatment when the prostate, by its mere size, has largely encroached on the bladder space, and there is no residuum. The urine is clear and free from all signs of sepsis, yet the patient has constant and urgent calls to pass water both by day and night. Finally, the operation may be necessary in certain cases in which the prostate is constantly bleeding and filling the bladder with clots which interfere with instrumentation and endanger the patient's life.

7. **Case of Landry's Palsy.**—The points of interest in Kapadia's case were: (1) Landry's palsy generally occurs between the ages of 20 and 30, but the patient under his observation was 60 years of age; (2) at first the case was difficult to diagnose, but later on, when the paralysis spread with such uniformity, as was noted, it was easy to diagnose.

8. **Easy Method of Removing the Nail.**—First of all, Tytler applies a compress of lead and opium for twenty-four hours. Then a tape is tied round the root of the toe till it produces intense congestion. Then he takes a large Pean's forceps with long parallel blades, and compresses the nail in the middle of the inner half with moderate firmness. A check as to the amount of compression can be introduced between the handles so as to prevent excessive pressure. Much less force is required than would be supposed. Then the toe is again wrapped in lead and opium lotion for three days. Then the inner part of the nail is found discolored and loose, so that it is easily removed with the scissors without any bleeding save a few drops from the root of the nail.

Lancet, London

July 17

9 Methods of Cataract Extraction. J. H. Parsons.
10 Senile Epilepsy, and the Vertiginous Attacks which Supervene for the First Time in Advanced Life, Illustrated by a Case of Cardioarterial Hypermyotrophy. T. D. Savill.
11 The Rôle of the Perineal Body During Labor and the Conduction of Delivery in Relation Thereto. R. H. Paramore.
12 A Case of Endothelioma Myxomatodes of the Maxillary Antrum. H. Tilley.
13 Fate of Damaged Joints. R. Warren.
14 *Pulmonary Tuberculosis Treated by Deep Muscular Injection of Mercuric Succinimid. J. E. Squire and J. A. Kilpatrick.
15 The Use of X-Rays in the Treatment of Malignant Disease. C. E. Iredell.
16 A Case of Severe Facial Carbuncle, with Ludwig's Angina and Parotitis. H. B. Walters, R. Coombe and R. V. Solly.
17 Case of Retinal Detachment in Pregnancy Associated with Nephritis. T. Wilson and R. B. Hird.
18 Case of Acute Lupus Erythematosus. J. E. R. McDonagh.

14. **Pulmonary Tuberculosis Treated by Mercuric Succinimid.**—Of the 13 patients who were treated, some, for various reasons, were not able to remain as long in the hospital as one could have wished in order to give the method a fair trial. The buttock was chosen as the most convenient place for injection, and every precaution was taken to sterilize both the needle and the part injected. For each injection 1/5 grain of mercuric succinimid was dissolved in 10 minims of distilled water; this was injected into the buttocks alternately every second day, Sunday being excluded. In the case of the females no injection was given during the menstrual period. In all cases careful attention was paid to the teeth and a mouth wash was used after each meal.

While none of the patients objected to the form of treatment, it can not be said that any of them liked it. With few exceptions there was always a brawny lump, varying from the size of the tip of one's little finger to the size of one's thumb or a little larger at the seat of injection for about 48 hours.

All the patients complained of a slight burning or pricking pain at the seat of injection for a time, varying from 6 to 12 hours. Three of the patients felt faint after the injection on three or four occasions, and one of them had a slight vomiting attack immediately after. The female patients complained less of pain than the males. This may be explained by the fact that Nature has provided them with more adipose tissue in that region and therefore sitting down would cause less discomfort.

The patients treated—six females and seven males—varied in age from 15 to 51 years; all, with one exception, were more or less advanced cases, three having cavities and all had tubercle bacilli in the sputum. In one case it was noticed that the sputum was swarming with bacilli on the first examination. About ten days later they were decreased by half, and in another week one had to look carefully for them, there were so few. In another case, though the physical signs decreased in severity, the bacilli increased in number. In most of the remaining cases the bacilli decreased in number and in one case none could be found after a couple of week's treatment.

A remarkable fact which applied to most of the cases was the rapidity with which the physical signs decreased. This continued for the first four or five weeks. Then, with two exceptions, most of the patients arrived at a stage where no further change could be made out, and some of them even returned to their former condition. In two cases the physical signs disappeared altogether.

Journal of Tropical Medicine and Hygiene, London

July 1

19 The Black Vomit ("Vómito Negro") of Iquitos (Peru). E. A. Vigil.
20 Case of Elephantiasis. J. C. Murphy.
21 Malaria and Kala-Azar. C. Donovan.

The Medical Press and Circular, London

July 7

22 *Recent Experiences with the Schäfer Method of Artificial Respiration. C. T. Dent.
23 A Clinical Inquiry into the Use of "Vacca" Milk for Bottle-Fed Infants and for Sick Children. W. Ewart and C. M. Guest.
24 *Spinal Anesthesia in Surgery. V. Orr.

July 14

25 Digitalis and Digitaline; with Special Reference to Their Uses and Modes of Administration. H. Huchard.
26 Myotonia Associated with Muscular Atrophy and Myasthenia. Professor Chvostek.
27 Prevention and Treatment of Malaria in Tropical Countries. R. Ross.
28 The Poisons and Pharmacy Act, 1908, in Relation to Public Health and Safety. H. W. Gadd.
29. Puerperal Fever and Gonorrhea. A. S. Dutton.

22. **Schäfer Method of Artificial Respiration.**—Dent's experience so far shows that Schäfer's method of artificial respiration is applicable in every sort of case; to the young and the old, to both sexes, and that the method fulfills all that Schäfer claims for it.

24. **Spinal Anesthesia in Surgery.**—In Orr's opinion, the statistics are not complete enough, nor are the indications or technic sufficiently clearly defined to enable one to assign to spinal anesthesia its proper place in surgery.

Clinical Journal, London

July 7

30 *Ectopic Pregnancy from the Practitioner's Standpoint. G. Herman.
31 Spinal Analgesia. E. C. Ryall.

July 14

32 Diagnosis and Treatment of Tuberculous Glands. A. Latham.
33 Trauma in Relation to Malignant Tumors. J. Bland-Sutton.
34 Some Points in the Surgical Treatment of Fracture of the Base of the Skull. L. B. Rawling.

30. **Ectopic Pregnancy.**—Herman claims that the diagnosis of tubal pregnancy before hemorrhage has occurred is impossible. The diagnosis of a tubal mole from some other conditions is difficult, but nearly all the conditions which may reasonably be mistaken for a tubal mole equally require prompt operation. Slight hemorrhage from perforation of a pregnant tube is often accompanied by death of the fetus and rapid absorption of the effused blood. When great intraperitoneal hemorrhage has taken place from perforation of a pregnant tube operation is urgent and simple. The danger from delay in operating is greater than that coming from the inexperience of the operator, if only he be one who understands antisepsis. After perforation of a pregnant tube the amnion may protrude into the peritoneal cavity, and the child grow free among the bowels, covered only by its amnion. In that case the placenta, as it grows, may become implanted on almost any abdominal viscus, and cover a large area. In such cases it is probable that after the primary preparation the mother runs hardly any risk until after the death of the child. In such cases, operation while the child is viable is an extremely dangerous one, and is more dangerous the more advanced the pregnancy. The danger is from hemorrhage resulting from separation of the placenta. The experience of more recent operators shows that it is nevertheless safer to remove the placenta than to leave it to come away. The methods of preventing such hemorrhage which have proved successful are: (a) the removal when possible of the viscera to which the placenta is attached; and (b) extensive prophylactic ligature of the arteries supplying the placental site. If the operation is postponed until after the death of the child, some time afterward (unfortunately we know not exactly how long) the circulation through the placenta ceases, and it becomes thrombosed. If an operation is now done the placenta can be peeled off without hemorrhage, and the operation is simple and safe. When the pregnancy is underneath the peritoneum there is danger of rupture at any period of the pregnancy. Therefore in this case the sooner operation is done the better.

Archives de Médecine des Enfants, Paris

July, XII, No. 7, pp. 481-560

35 Portals of Entry for Tuberculosis in Infants. (Portes d'entrée de la tuberculose chez les nourrissons.) V. Hutinel.
36 Anatomic Study of Mongolian Idiots. (Étude anatomique de l'idiotie mongolienne.) L. Babonneix.
37 Constipation in Children from Various Causes. (Classification étiopathogénique des constipations chez l'enfant.) E. Gaujoux.

Presse Médicale, Paris

July 10, XVII, No. 55, pp. 489-496

38 *Diagnosis and Treatment of Insufficiency of the Suprarenals. (Insuffisance surrénale.) E. Sergent.
39 *The Surgical Profession in America. S. Pozzi.

38. **Suprarenal Insufficiency.**—Sergent analyzes the symptoms of suprarenal insufficiency affecting the circulation, the digestion, the nervous system and the general metabolism. The syndrome of suprarenal insufficiency may be slow or acute. In the chronic form, of which Addison's disease is the extreme type, if there is no bronzing, it can be rendered manifest by applying a mustard plaster which draws the pigment to the surface. The tuberculous process in the suprarenals in this disease is almost always primary, and these glands are rarely affected even with advanced tuberculosis in other organs. Without the bronzing, the syndrome suggests pernicious anemia, leukemia or latent cancer, especially the weakness, the low blood pressure, the loss of appetite, the constipation, vomiting, anemia and progressive emaciation. The acute form may simulate a fulminating poisoning, peritonitis, meningitis, apoplectiform coma, etc., and it may be suspected when the febrile and other phenomena of an infectious disease are suddenly supplanted by signs of depression, small, unstable pulse, subnormal temperature and arterial tension. He is convinced that the "white line" is pathognomonic of suprarenal insufficiency and it may prove very instructive in cases of sudden death from this cause in which circumstances indicate possible poisoning or violence. Besides trauma, an operation or even a pregnancy may bring on this acute insufficiency on the part of the suprarenals. Treatment should aim to prevent the development of the acute phase or exacerbations in persons already affected with the chronic form. They should avoid exertions and contact with persons suffering from infectious diseases and should refrain from toxic drugs, especially from arsenic, which is a violent poison in case of suprarenal insufficiency, and they should not permit any surgical operations unless for vital necessity. On the other hand, they will derive benefit from phosphates and especially from lecithin. Antisyphilitic treatment should be instituted if there is a possibility of a syphilitic origin, but the mercury and iodid must be managed with great care as they are liable to prove poisonous for the suprarenal capsule. Suprarenal organotherapy is useful both for differentiation and cure, and he has witnessed the entire subsidence of the Addison syndrome, including the disappearance of the "white line" under the influence of suprarenal medication. Fresh glands from young calves may be used, the patient ingesting from 1.5 to 2 gm. a day up to 5 gm., or the dry extract can be taken. This is kept up for ten or twelve days, then suspended for two or three, and then recommenced. As a rule, he prefers the extract of the whole gland, but he sometimes uses adrenalin. He has found this particularly useful in infectious diseases when he suspected suprarenal involvement. Signs of cardiovascular weakness subside under the influence of the adrenalin, and the white line vanishes and reappears parallel with the fluctuations of the pulse, which he regards as substantial proof of its pathognomonic character. The usual dose is 0.001 gm. a day, but up to 0.006 may be given fractioned in 6 doses, and this, he says, may be kept up for two months. The white line is the opposite of the "red line" of meningitis. The finger is drawn lightly along the skin of the abdomen; in a few seconds the path of the finger shows up as a white stripe, growing more and more distinct and remaining stationary for three or four minutes and then disappearing.

39. See Paris Letter, page 216.

Semaine Médicale, Paris

July 7, XXIX, No. 27, pp. 313-324

40 *Surgical Treatment of Spastic Paralysis. (Traitement chirurgical de la paraplégie spasmodique: l'opération de Foerster.) F. Rose.

July 14, No. 28, pp. 325-336

41 Proper Technic for Pubiotomy; Its Present Status. (Comment éxécuter une pubiotomie?) R. de Bovis.

40. **Surgical Treatment of Spasmodic Paraplegia.**—Rose reviews the fifteen cases on record in which resection of the nerve roots has been attempted in the treatment of this affection, according to Foerster's technic. Two of the patients died, both adults, one from infection of the wound from a pre-existing eschar and the other from operative shock. The other patients were remarkably benefited, being restored to active life after years of absolute and hopeless immobility. The literature on the subject is reviewed in detail.

Beiträge zur Klinik der Tuberkulose, Würzburg

XIII, No. 1, pp. 1-144. Last indexed May 1, p. 1466

42 *Immunity of the Tuberculous to Tuberculosis. (Weitere Versuche über Immunität gegen Tuberkulose durch Tuberkulose, zugleich ein Beitrag zur Phthisiogenese.) P. H. Römer.
43 *The Mechanical Predisposition of Lung Apices to Tuberculous Infection. (Mechanische Disposition der Lungenspitzen zur Erkrankung an tuberkulöser Phthise.) F. Koch.
44 *Importance of Diazoreaction for Prognosis of Pulmonary Tuberculosis. J. P. Gwerder.
45 *Specific Aids in Diagnosis and Prognosis of Tuberculosis. S. v. Ruck, Asheville, N. C.
46 Graphic Registration of Lung Findings. (Die graphische Darstellung des Lungenbefundes.) G. Liebe.
47 *Hemoptysis as Early Symptom of Pulmonary Tuberculosis. (Hämoptoe als Frühsymptom der Lungentuberkulose.) B. Müller.
48 Intracutaneous Tuberculin Test for Diagnostic Purposes. (Intrakutanreaktion.) F. Mendel.

42. **Immunity of the Tuberculous to Tuberculosis.**—Römer reports a series of experiments undertaken to determine the power of resistance of tuberculous animals to renewed infection. The results show that spontaneous tuberculosis of a chronic character protects guinea-pigs against renewed infection. The protection is more decided the more chronic the first infection and the longer the interval since the first symptoms. Comparing these results with clinical experience shows that a first infection which does not affect materially the general

health is yet able to protect against new infection, unless the opportunities for new infection are so numerous and the infection so intense that it overcomes the influence of the protecting immunization. A slight early tuberculous process thus protects the individual against mild new infection. The tuberculous individual reacts to severe new infection by the development of slow phthisis, while the normal individual under the same conditions reacts with acute miliary tuberculosis. The aim in prophylaxis should be to avoid severe new infection. This can be done by restricting the opportunities for family and house infection, or by protective vaccination, or by preventing autoinfection from the already tuberculous organism, or by these combined. Some stereoscopic views of the findings in the lungs of the guinea-pigs are given to show the difference between the reaction to new infection in the normal and the infected lungs.

43. **Prophylaxis of the Mechanical Predisposition of the Apices to Tuberculosis.**—Koch has practiced in the tropics and has been impressed with the remarkable development of the chest in native races, its broad outlines and expansion, all in such contrast to the narrow, almost concave chest of civilized peoples. He is convinced that this difference is the result of habits of clothing and schooling, and that until these are changed no effectual prophylaxis against the "white plague" is possible. He declares that the imagination can not conceive of any article better adapted to check the development of the chest of the child and the lungs within than the suspenders and skirt supporters worn by children nowadays. The shoulders and upper part of the lungs are compressed by them, and this pressure keeps up all day long, the weight of things in the pockets adding to the drag on the shoulders. The supporters over the shoulders are held down as the child sits on the trousers or skirts. The bones, cartilages, muscles and lungs are kept constantly compressed and are thus unable to develop and the compressed portion of the lungs and apex thus remains a place of lesser resistance all through life. The effect of compression on liver and kidneys from the wearing of corsets, and the influence of immobilization on the healing of fractures and pleurisy, demonstrate the great influence of external agencies on the development of parts and organs beneath. Injury from the clothing is supplemented by injury from long sitting in school, the bad air and the lack of opportunities for oxidation processes in the body cells. The heart also suffers from the lack of development of the chest and a vicious circle is set up. He concludes his article with an appeal for space in the growing lungs, freedom for the apices and shoulders, and more out of door air and exercise.

44. **Diazoreaction in Tuberculosis.**—Gwerder emphasizes the importance of the diazoreaction in pulmonary tuberculosis as it gives valuable information in many cases in regard to the intensity and probable course of the disease. The test should be repeated several times as single findings are not conclusive.

45. Abstracted in THE JOURNAL, July 4, 1908, p. 72.

47. **Hemoptysis as Early Symptom of Pulmonary Tuberculosis.**—Müller states that hemoptysis was an early symptom in 170 of the 875 tuberculous patients at the Davos German Sanatorium during the last four years. Early hemoptysis was twice as frequent in the male as in the female patients, but none of them displayed a greater tendency to hemorrhage later than other groups of patients. The alarm from the early hemoptysis generally has a salutary effect, as vigorous treatment is instituted earlier. After nine months or a year in the sanatorium full earning capacity was restored in 71 patients and partial in 60 others; one patient succumbed to miliary tuberculosis.

Münchener medizinische Wochenschrift

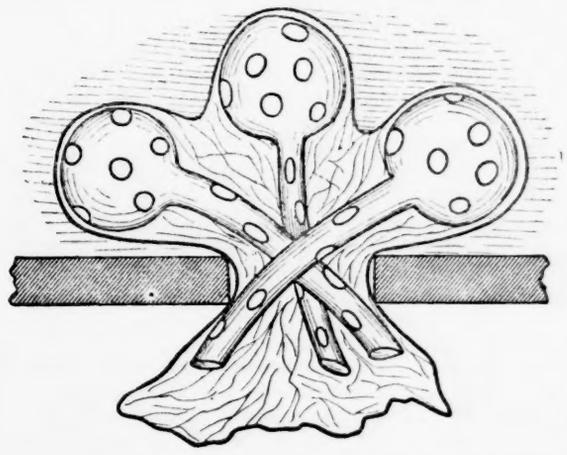
June 29, LVI, No. 26, pp. 1313-1360

49 Practical Value of Complement-Binding Reaction. H. Lüdke.
50 *Microbes in Normal Organs. (Keimgehalt normaler Organe.) H. Conradi.
51 Electric Injuries. (Verletzungen durch den elektrischen Strom.) Oberst.
52 *Importance of Intraperitoneal Hemorrhage in Stab and Firearm Wounds of the Intestines. (Bedeutung der intraperitonealen Blutung bei penetrierenden Darmverletzungen.) Gutzeit.
53 Moro's Tuberculin Salve Reaction. (Morosche Salbenreaction.) Bullinger.
54 Dilatation or Tumor of the Heart. (Herzdilatation oder Herztumor.) Schott.
55 Modification of Esbach Albumin Test. (Modifikation der Esbachschen Eiweissprobe.) Kwilecki.
56 *Utilization of Natural Defensive Forces in Treatment of Peritonitis. (Nutzbarmachung der natürlichen Schutzkräfte der Bauchhöhle bei der Behandlung der Appendizitis und der diffusen Perforationsperitonitis.) P. Janssen. Commenced in No. 25.

50. **Bacterial Content of Normal Organs.**—Conradi has perfected a technic which protects organs against contamination from without while favorably influencing bacterial proliferation, and his examination of 162 apparently normal organs taken from 150 recently slaughtered healthy animals has given surprising results. In 72 of the 162 organs bacteria were found; they were of a number of species, the colon bacillus most common. The bacterial findings were positive in 42 of the 63 livers examined; in 18 of the 59 pieces of muscles; in 6 of the 19 kidneys; in 4 of the 5 lungs, and in 1 of the 11 spleens. Anaërobic species were found in 30 of the 72 positive cases. This latent vegetation of bacteria in the organs throws light on the origin of cryptogenic and autoinfections, and also shows the necessity for revision of the present methods of meat inspection. With his technic a piece of the organ about 50 gm. in weight is cut out with a sterile knife and forceps and plunged at once, for a minute at least, into oil heated to 200 C. and then transferred for four hours to a solution of 2 per cent. mercuric chlorid. It is then placed in a large conical glass with hermetically closing cover and kept at 37 C. for twenty hours. The chunk is then cut in half and from the center of one half scraps are taken for culture of anaërobes in a fluid gelatin medium, while a scrap from the other half is transferred to a plate culture and the Gram technic is also applied to a specimen. The hot oil sears the outside of the chunk, while the bacteria are enriched by the long incubation.

52. **Intraperitoneal Hemorrhage with Stab or Firearm Wounds of the Intestines.**—Gutzeit reports a case which confirms his assumption that the hemorrhage and perforation are liable to counteract each other. If the blood pours out quicker than the bowel content it dilutes and checks the latter and aids in the encapsulation, both mechanically and by its protecting substances. On the other hand, the hemorrhage is arrested by the tension of the abdominal wall and the distension and paralysis of the intestines.

56. **Utilization of the Natural Defenses in Treatment of Perforation Peritonitis.**—Janssen describes the technic used at Witzel's clinic for drainage of the abdomen in case of appendicitis and diffuse peritonitis. The aim is to keep the parts



from sticking together, to insure drainage of the depths and ample outflow. No attempt is made to rinse out the abdominal cavity but every effort is devoted to autoirrigation, that is, to utilize the enormous secreting capacity of the peritoneum. By supplying large amounts of fluid the peritoneum is induced to secrete copiously and this is drained rapidly away, thus flushing the peritoneum from within in the most effectual manner. The stomach and bowel can not be relied on, and consequently the fluid is infused subcutaneously. Physiologic salt solution is thus given four or five times a day, including the night, so that three or four liters of fluid are thus incorporated in twenty-four hours, and this is kept up, grad-

ually reducing the amounts, for six or seven days. The drainage is by hollow glass balls with a long stem studded thick with perforations (see illustration); the balls are from 1 to 3 cm. in diameter. A piece of gauze is fitted into the cavity, as for a Mikulicz tampon, and then the ball drains are introduced, the stems emerging from the operative wound. The patient lies permanently on his right side, thus insuring ample outflow of the fluid. Of equal importance is the supervision of the action of the heart, and digitalis is given systematically before and after the operation, and other stimulants are used at the slightest signs of flagging on the part of the heart. Great stress is also placed on the application of warmth, not only to prevent collapse but to induce active hyperemia in the organs inside the peritoneum and thus promote the activity of the bowels. The heat is applied in the form of hot compresses, poultices or a thermophore. The intestines are also stimulated by introduction of the intestinal tube; drugs are seldom necessary. The treatment of the peritonitis thus begins as soon as the patient returns to his bed after the operation and includes these four important factors: stimulation of the heart action and bowel functioning, application of heat and copious autoirrigation of the abdominal cavity.

Wiener klinische Wochenschrift, Vienna

July 1, XXII, No. 26, pp. 911-948

57 Condensed Human Milk in Infant Feeding. (Ernährungsversuche bei Neugeborenen mit konservierter Frauenmilch.) E. Mayerhofer and E. Pribram.
58 *Non-Diabetic Glycosuria. K. Glaessner.
59 *Improved Instrumental Technic for Gastroenterostomy. (Instrument zur Anlegung von Magen- und Darmanastomosen.) R. Frank.
60 *Improved Technic for Cultivation of Spirochetes. (Untersuchung der Spirochaete pallida mit dem Tuschverfahren.) V. Hecht and M. Wilenko.

58. **Non-Diabetic Glycosuria.**—Glaessner discusses glycosuria from hyperglycemia and alimentary glycosuria, the toxic from chemical and thermic injury and bacteria, and the glycosuria of levulosuria, lactosuria, galactosuria, pentosuria and elimination of glucuronic acid. He has noticed that transitory glycosuria from asphyxia, carbon monoxid poisoning and exposure to cold is always accompanied by lactic acid in the urine. He has never detected lactic acid in the urine in diabetes and thinks that this may sometimes aid in differentiation.

59. **Instrument for Anastomosis.**—The two branches of the instrument are inserted separately, one in a buttonhole in the stomach wall, the other in a buttonhole in the loop of the intestine, when gastroenterostomy is contemplated. The branches are thus introduced in opposite directions. The two branches are then brought into juxtaposition and the handles screwed tight together. The serosa of the bowel and stomach is then sutured together, first on one side of the instrument and then on the other. A slender knife is then introduced between the blades and the lumen opened with it, after which the instrument is removed and the buttonholes sutured. Frank claims a number of advantages for this instrument.

60. **India Ink Method for Studying Spirochetes.**—Burri has materially simplified bacteriologic research by his India ink method. A droplet of the fluid to be examined is mixed with a droplet of India ink on an object glass and allowed to dry. Examined then through the microscope the bacteria stand out as with the dark field illumination. Hecht states that the method is particularly useful for examining spirochetes, so that any practitioner in less than a minute can reveal the *Spirochæta pallida* in case of positive findings.

Zentralblatt für Gynäkologie, Leipsic

June 26, XXXIII, No. 26, pp. 897-928

61 *Lactic Acid in Blood and Urine in Epilepsy and Eclampsia. (Ist die Fleischmilchsäure im Blut und Harn bei Epilepsie und Eklampsie eine Folge der Krämpfe?) P. Zweifel.
62 History of Extraperitoneal Cesarean Section. (Zur Geschichte des extraperitonealen Kaiserschnittes.) L. Nürnberger.
63 Parametritis and Posterior Paravaginitis with Heterotopic Proliferation of Epithelium. R. Meyer.

61. **Lactic Acid in the Blood and Urine in Epilepsy and Eclampsia.**—Zweifel has been continuing his study of this subject since he reported the constant finding of lactic acid in the urine in 17 cases of eclampsia. He has found small amounts in the urine in 5 cases of "pregnancy kidney" and large amounts in 3 cases of "pregnancy nephritis." He thinks this finding is important as this latter condition is the preliminary to eclampsia. Examination of the urine of three epileptics showed no trace of lactic acid in one and very little in the other, but in a third case 1.489 gm. of lactic acid were found in 845 c.c. of urine at one time and 3.369 gm. in 505 c.c. at another time. The seizures in this last case were very severe and in the intervals the patient was apathetic. Meat was dropped then from the diet of this epileptic, after which lactic acid could no longer be detected in the urine; there has been no recurrence of seizures and the patient is less apathetic. These findings confirm the assumption that tonic general convulsions are merely a symptom and that epileptic seizures may occur from very different causes.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 1, XXX, No. 78, pp. 817-824

64 *Work of the Heart. (Lavoro del cuore.) T. Silvestri.

July 4, No. 79, pp. 825-840

65 Hemorrhagic Purpura and Acute Aplastic Anemia. U. Deganello.

July 6, No. 80, pp. 842-848

66 *Improved Stain for Detection of Spermatozoa. (Nuovo metodo di colorazione degli spermatozoi nelle macchie.) B. Baecchi.
67 Fracture of Sphenoid Bone from Direct Trauma. (Frattura dello sfenoide da causa diretta.) T. Costa and C. Migliucci.

64. **The Work of the Heart.**—Silvestri relates some experiences and discusses physiologic findings which demonstrate that the mechanical work of the heart is much less than generally assumed, owing to certain mechanical factors which he enumerates. Also that the heart is capable of exertion six or seven times as great as its normal work, and is able to get along without inducing symptoms sometimes when its working capacity is reduced to a fraction of normal.

66. **Stain for Spermatozoa.**—Baecchi states that his technic is extremely simple and rapid, while it shows up the spermatozoa in a few seconds and the stained specimens are durable. A thread of the soiled tissue is placed in a concentrated aqueous solution of acid fuchsin for 25 or 30 seconds; then transferred to a 1 per cent. alcoholic solution of hydrochloric acid in 70 per cent. alcohol for from 10 to 30 seconds, until decolored to a pale pink; it is then placed in absolute alcohol for 15 to 20 seconds. The thread is then transferred to an object glass in a drop of xylol and the fibers separated when it is ready for the microscope. The heads of the spermatozoa show bright red while the thread fibers are decolored or only slightly pinkish. The most perfect specimens are obtained when the thread is first soaked in distilled water for a few hours. A counter stain with methylene blue shows up the spermatozoa even more perfectly.

Books Received

All books received are acknowledged in this column and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. A selection will be made for review in the interests of our readers and as space permits.

SECOND ANNUAL REPORT OF THE COMMISSIONER OF HEALTH OF THE COMMONWEALTH OF PENNSYLVANIA, 1907. Cloth. Pp. 974.

THE BLOOD IN HEALTH AND DISEASE. By R. J. M. Buchanan, M.D., F.R.C.P., Professor of Forensic Medicine in the University of Liverpool. Cloth. Pp. 318, with illustrations. Price, $4.50. New York: Oxford University Press, 1909.

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